

FIG. 1

TITLE: OPTICAL CROSS-CONNECT
APPARATUS
INVENTORS: Yoichi OIKAWA et al.
SERIAL NO.:
DOCKET NO.: 1095.1298

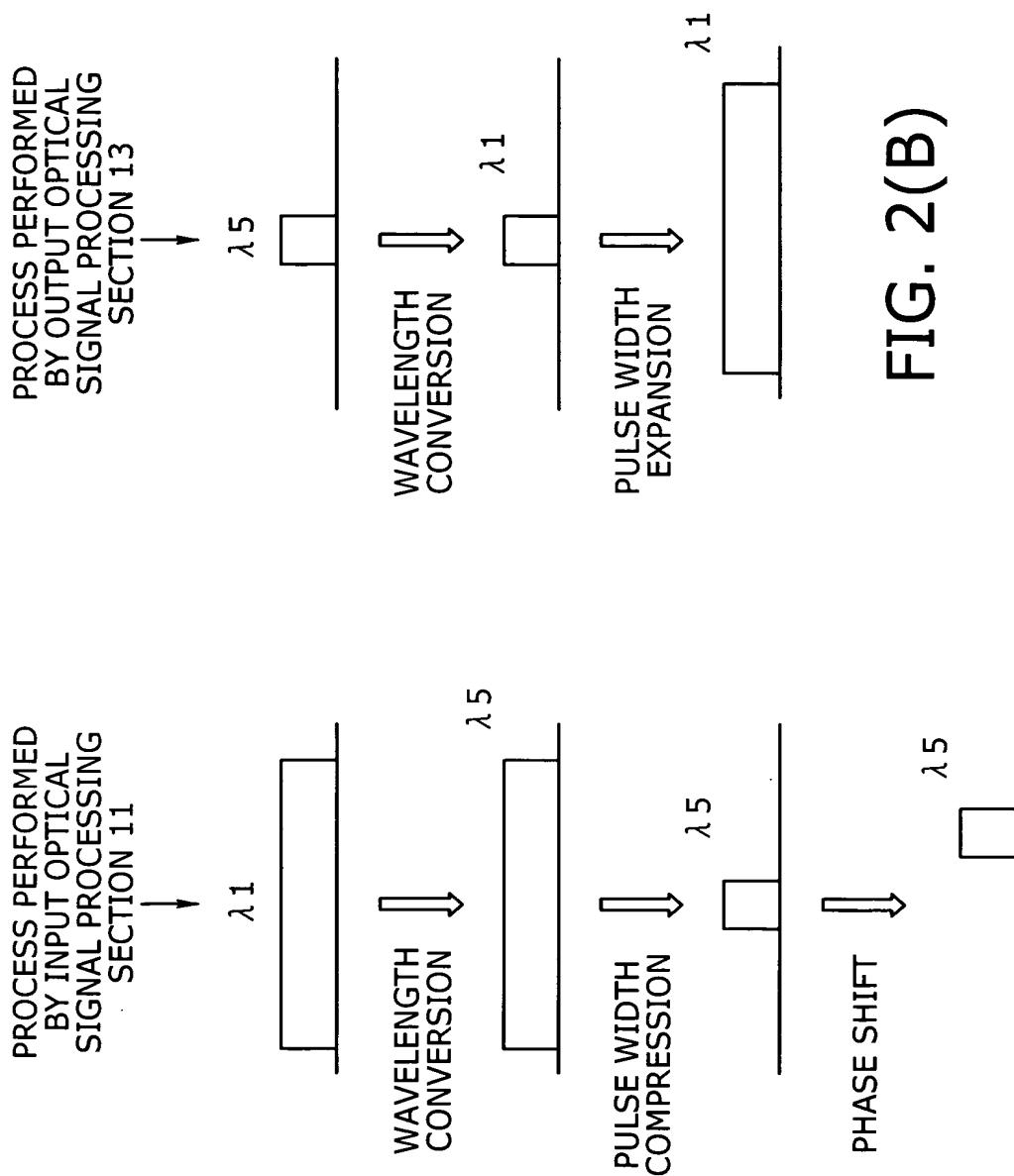


FIG. 2(A)

FIG. 2(B)

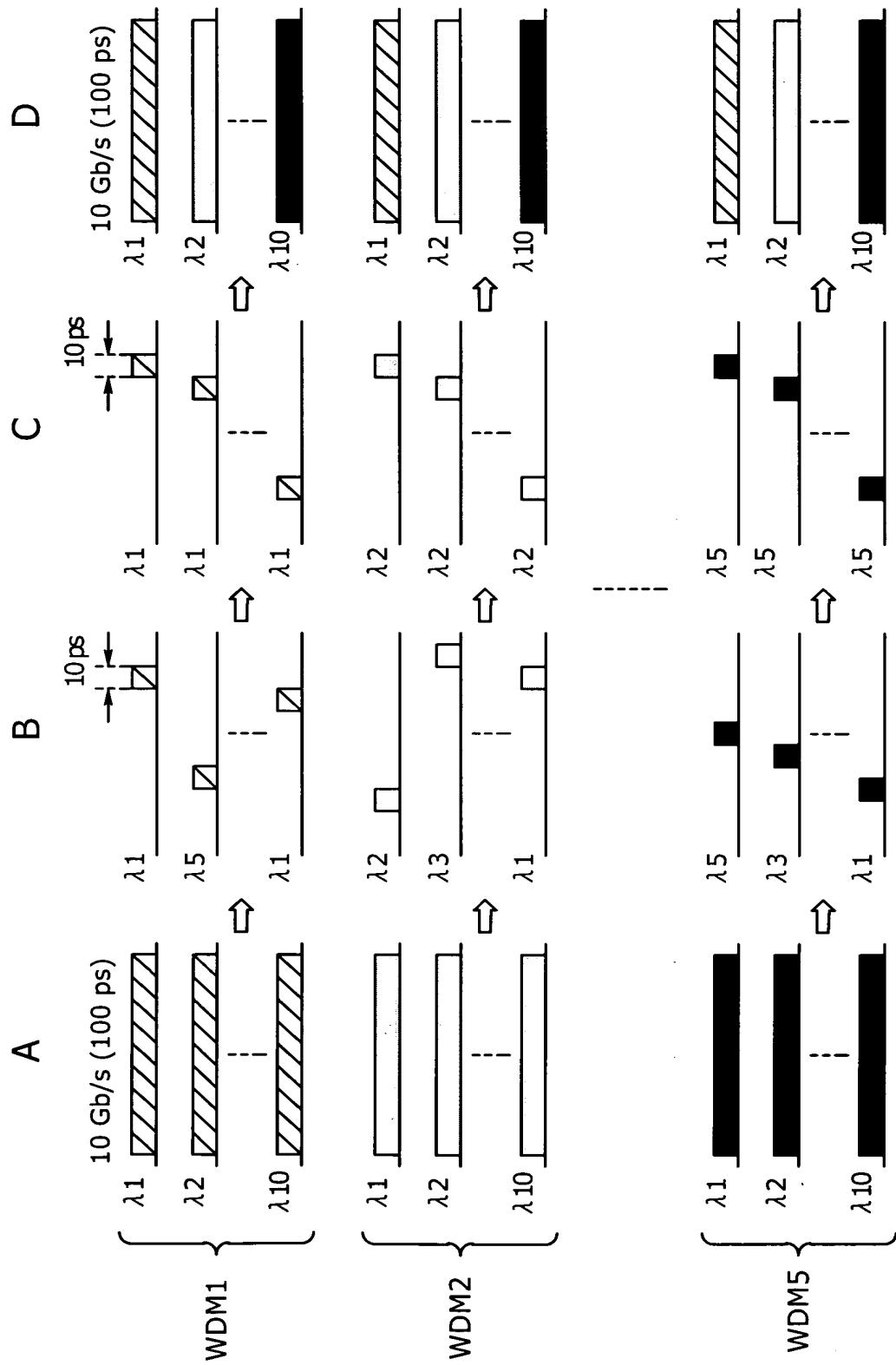


FIG. 3

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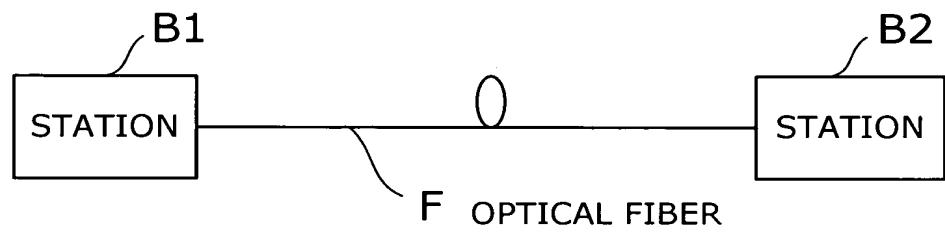


FIG. 4

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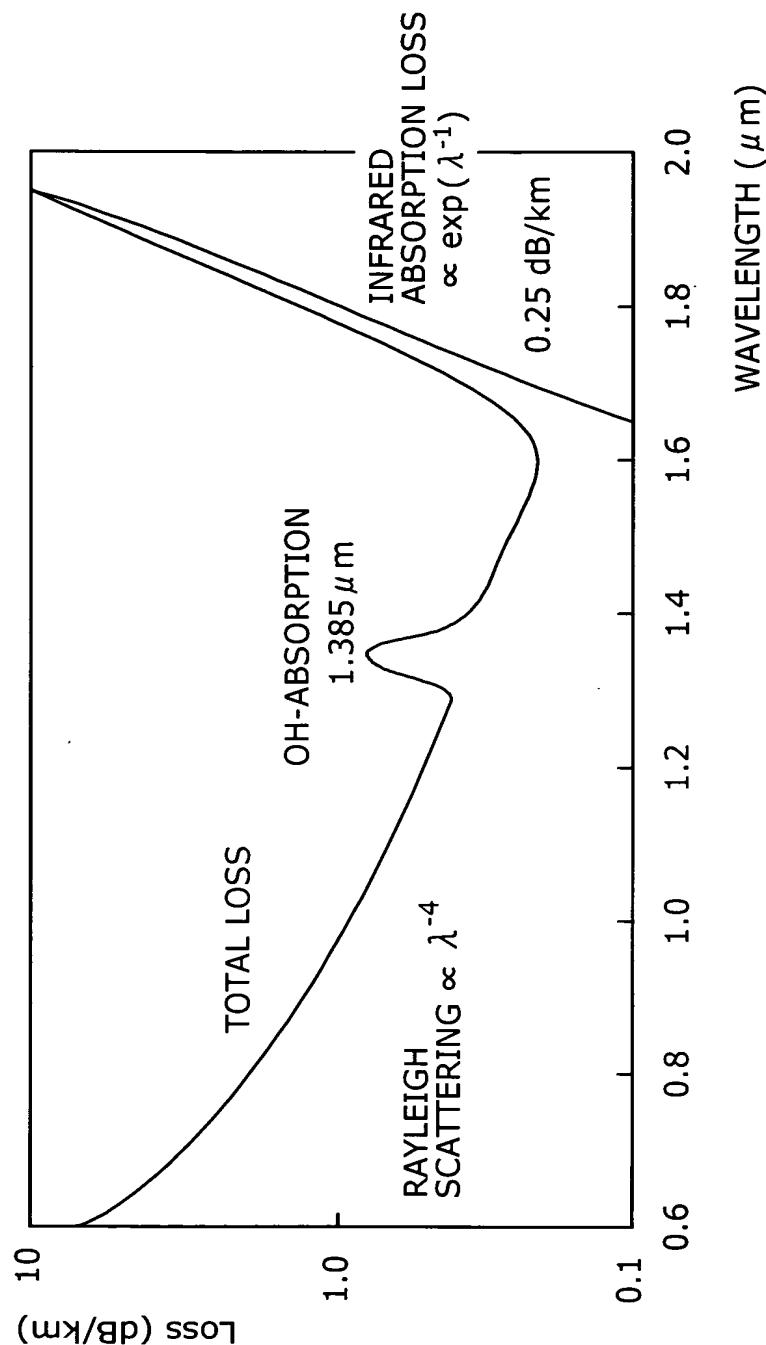


FIG. 5

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BAND NAME	MEANING	WAVELENGTH RANGE
O BAND	Original	1260 nm to 1360 nm
E BAND	Extended	1360 nm to 1460 nm
S BAND	Short wavelength	1460 nm to 1530 nm
C BAND	Conventional	1530 nm to 1565 nm
L BAND	Long wavelength	1565 nm to 1625 nm
U BAND	Ultralong wavelength	1625 nm to 1675 nm

FIG. 6

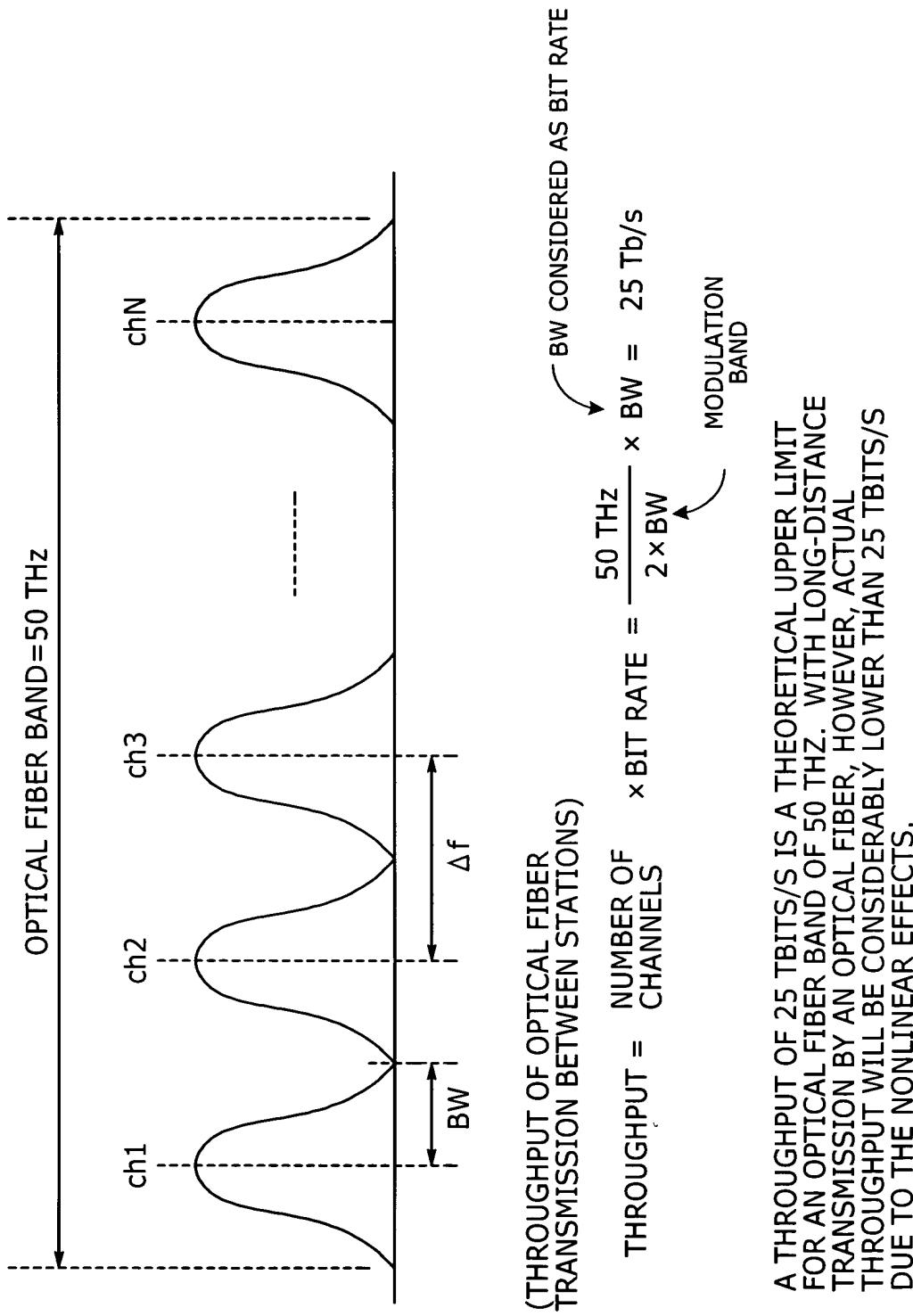


FIG. 7

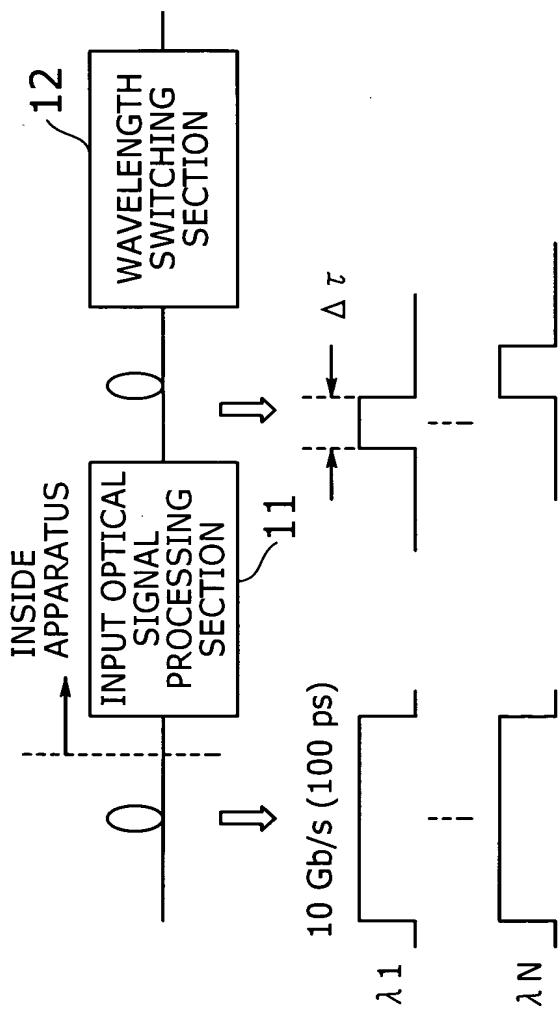


FIG. 8

(THROUGHPUT OF INTRA-APPARATUS OPTICAL FIBER TRANSMISSION)

THROUGHPUT = NUMBER OF COMPRESSED PULSES \times BIT RATE OF ONE COMPRESSED PULSE

$$= \frac{50 \text{ THz}}{2 \times \left(\frac{1}{\Delta \tau} \right)} \times \underbrace{\frac{100 \text{ ps}}{\Delta \tau}}_{\text{TIME DIVISION NUMBER}} \cdot 1.0 \text{ Gb/s} = \frac{25 \text{ Tb/s}}{\frac{\text{Bwfiber}}{2}}$$

THE THROUGHPUT OF THE INTRA-APPARATUS OPTICAL FIBER TRANSMISSION MAY BE CALCULATED BY MULTIPLYING (OPTICAL FIBER BAND) AND (1/2) TOGETHER. UNLIKE THE OPTICAL FIBER TRANSMISSION BETWEEN STATIONS, THE INTRA-APPARATUS OPTICAL FIBER TRANSMISSION IS SHORT DISTANCE TRANSMISSION, SO THE NONLINEAR EFFECTS HAVE NO INFLUENCE. THEREFORE, A THROUGHPUT OF 25 TBITS/S, BEING A THEORETICAL UPPER LIMIT, CAN BE ACHIEVED.

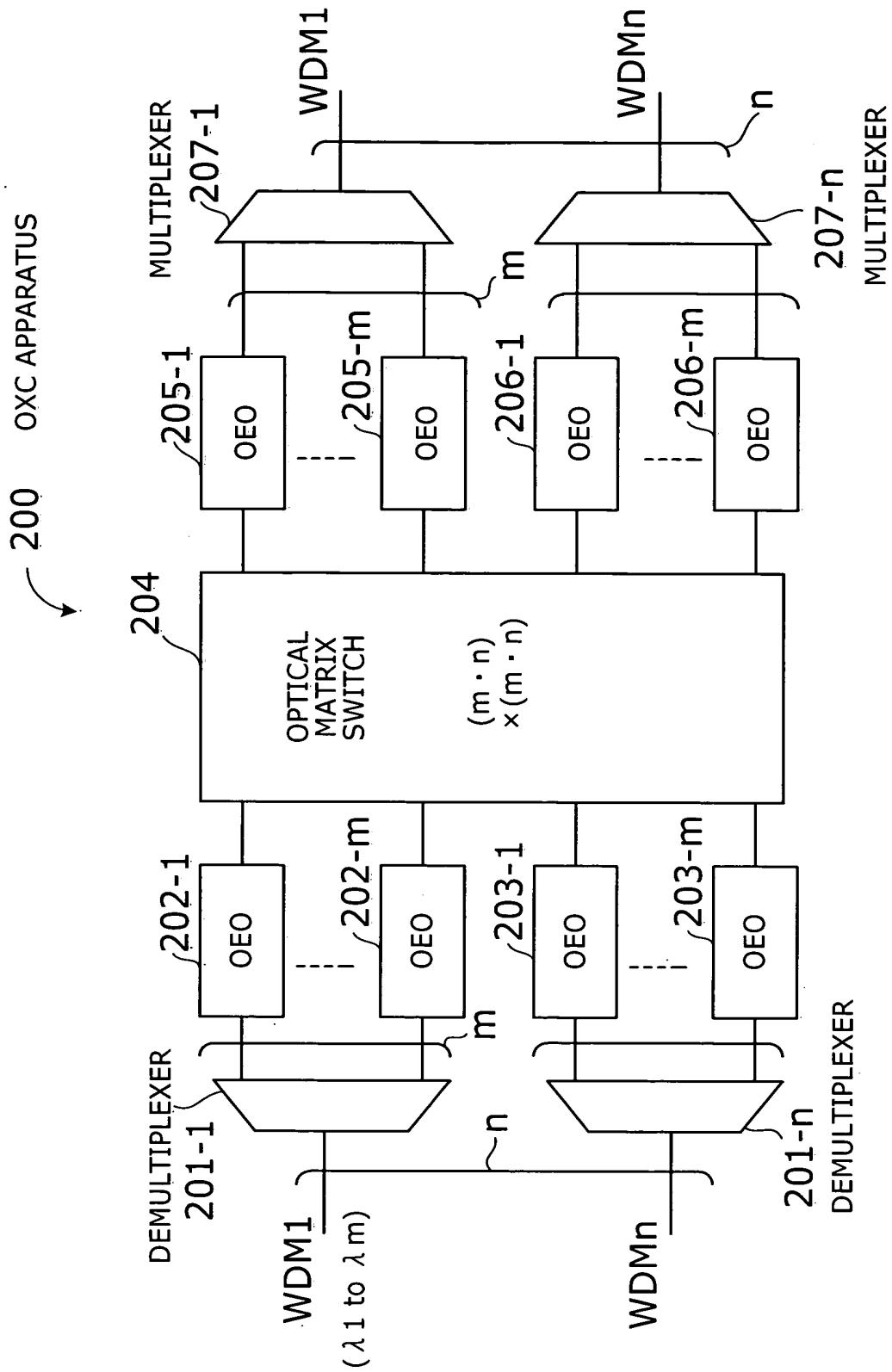


FIG. 9
PRIOR ART

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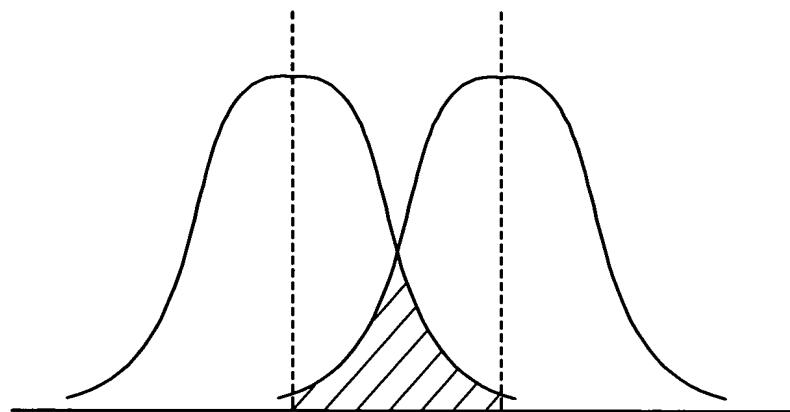


FIG. 10(A)

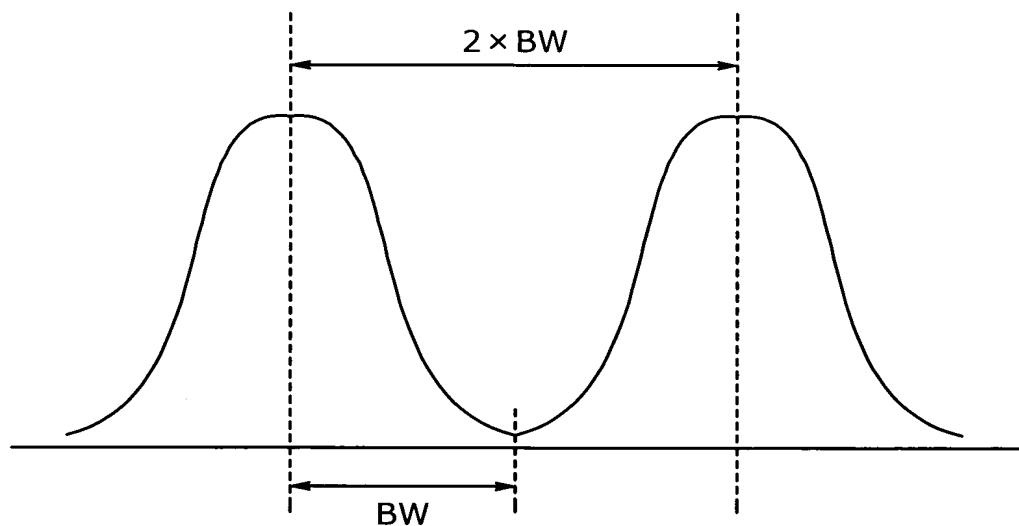


FIG. 10(B)

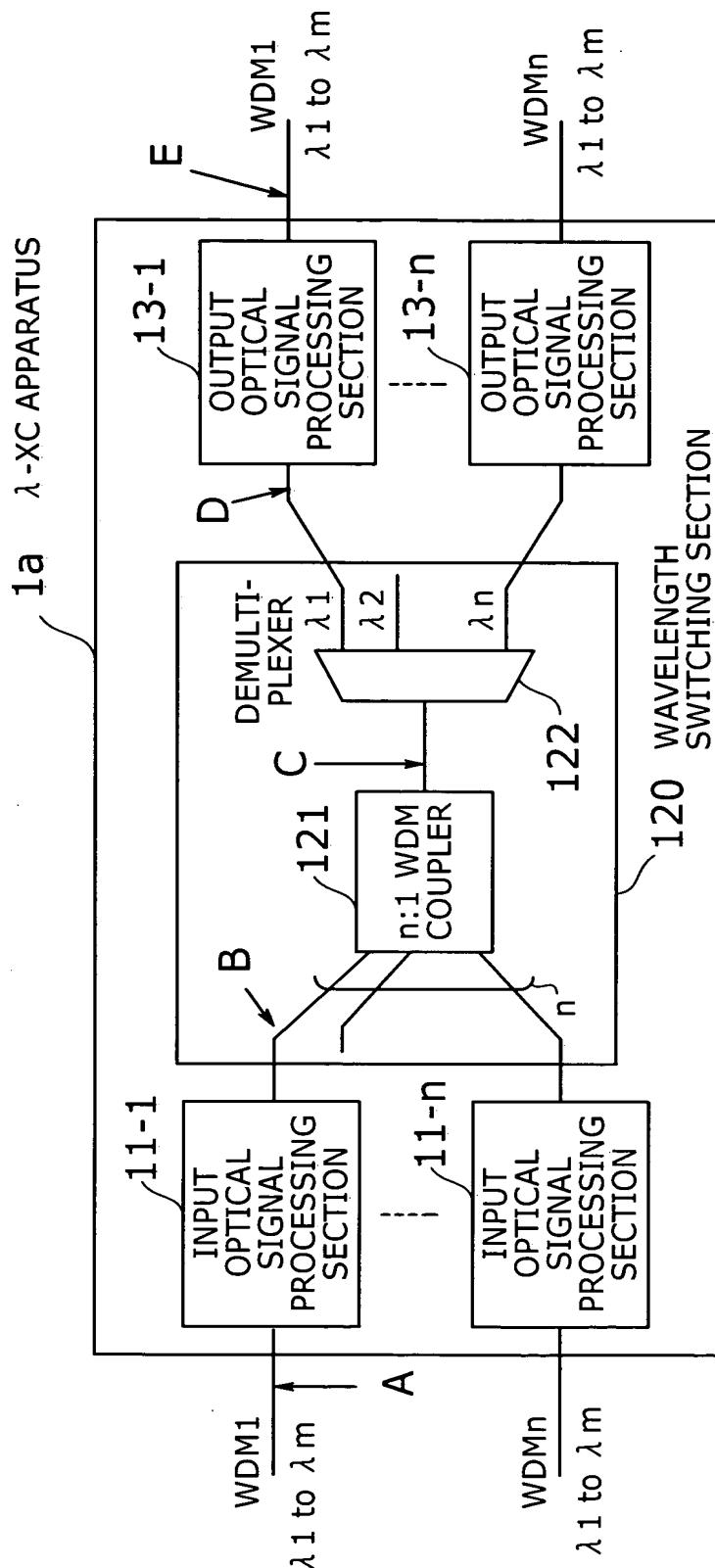


FIG. 11

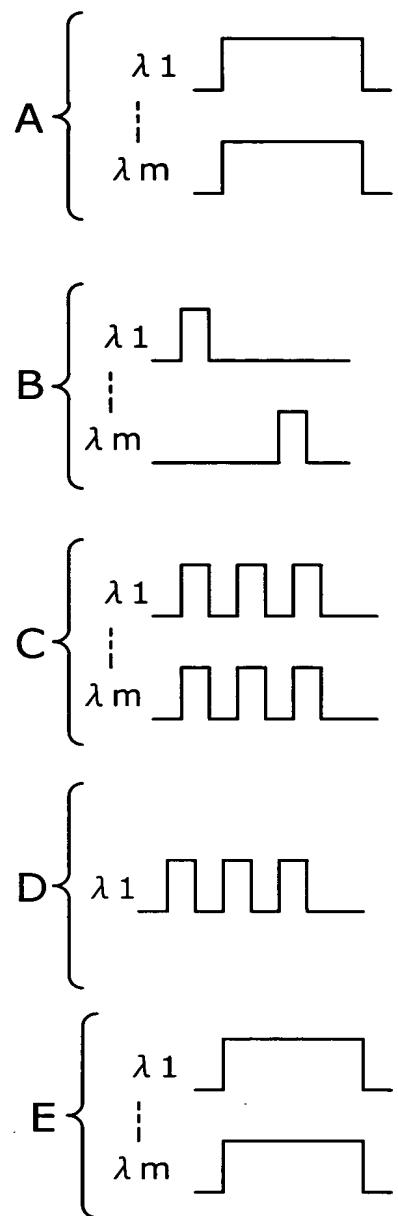


FIG. 12

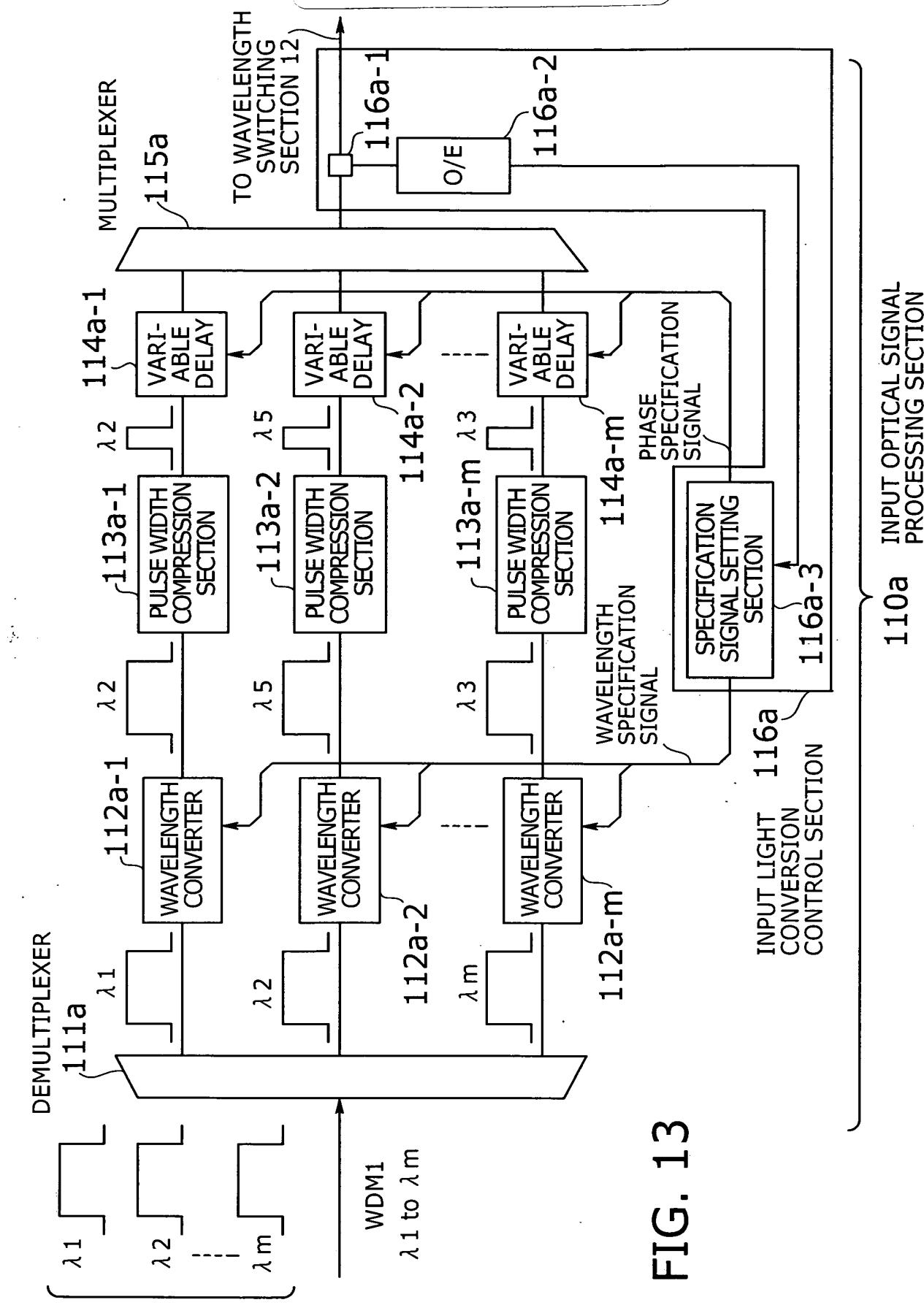


FIG. 13

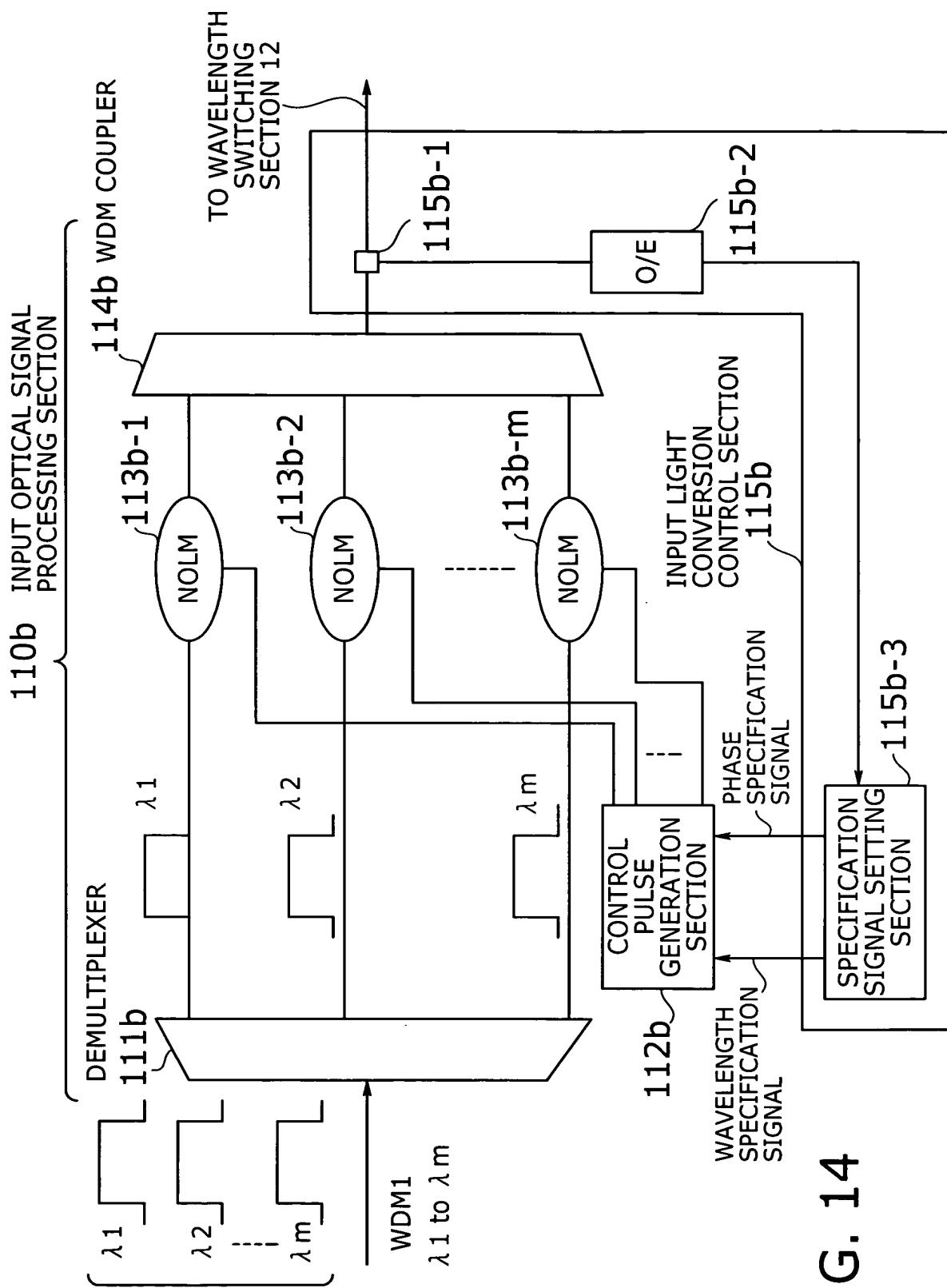


FIG. 14

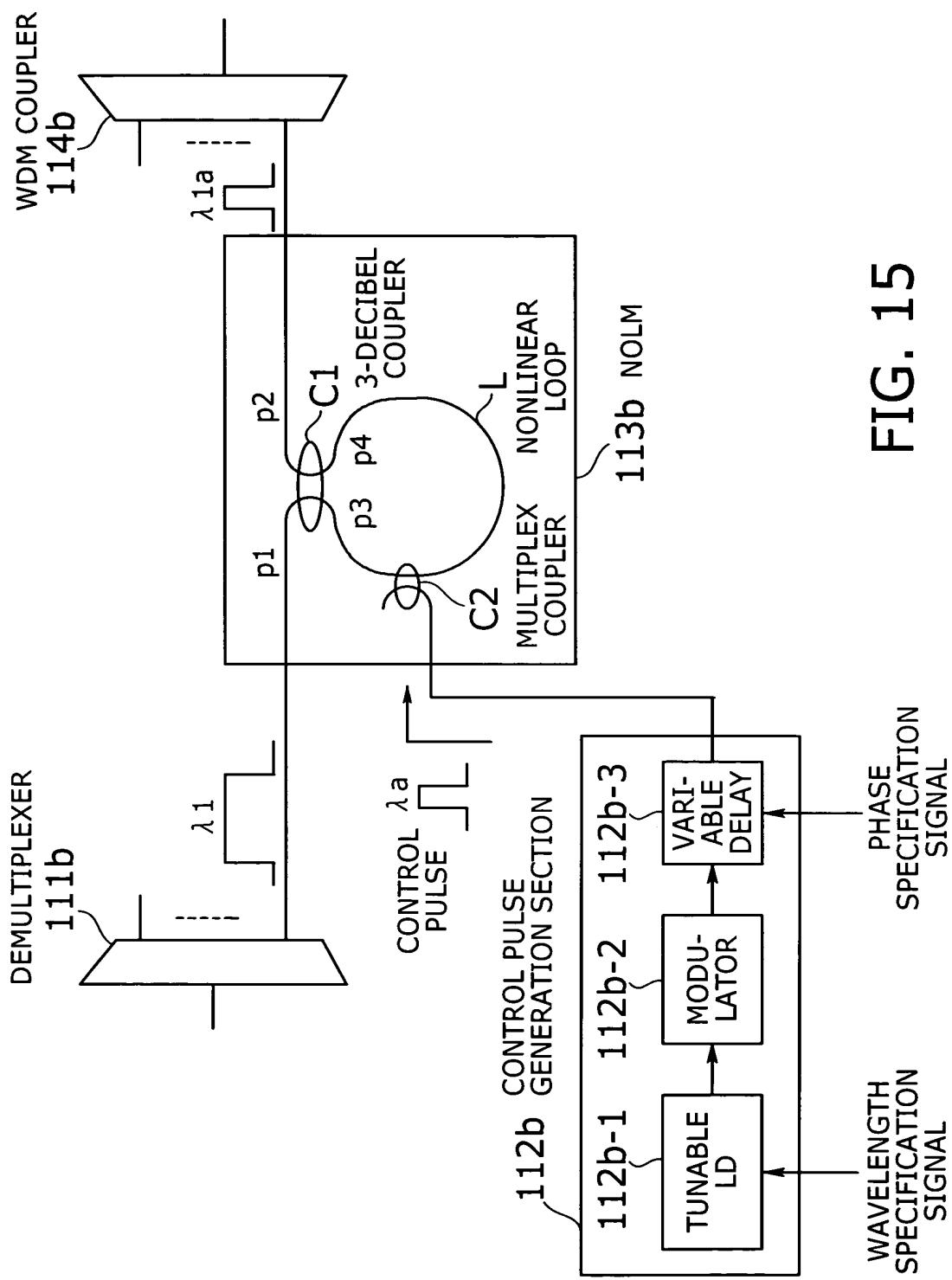


FIG. 15

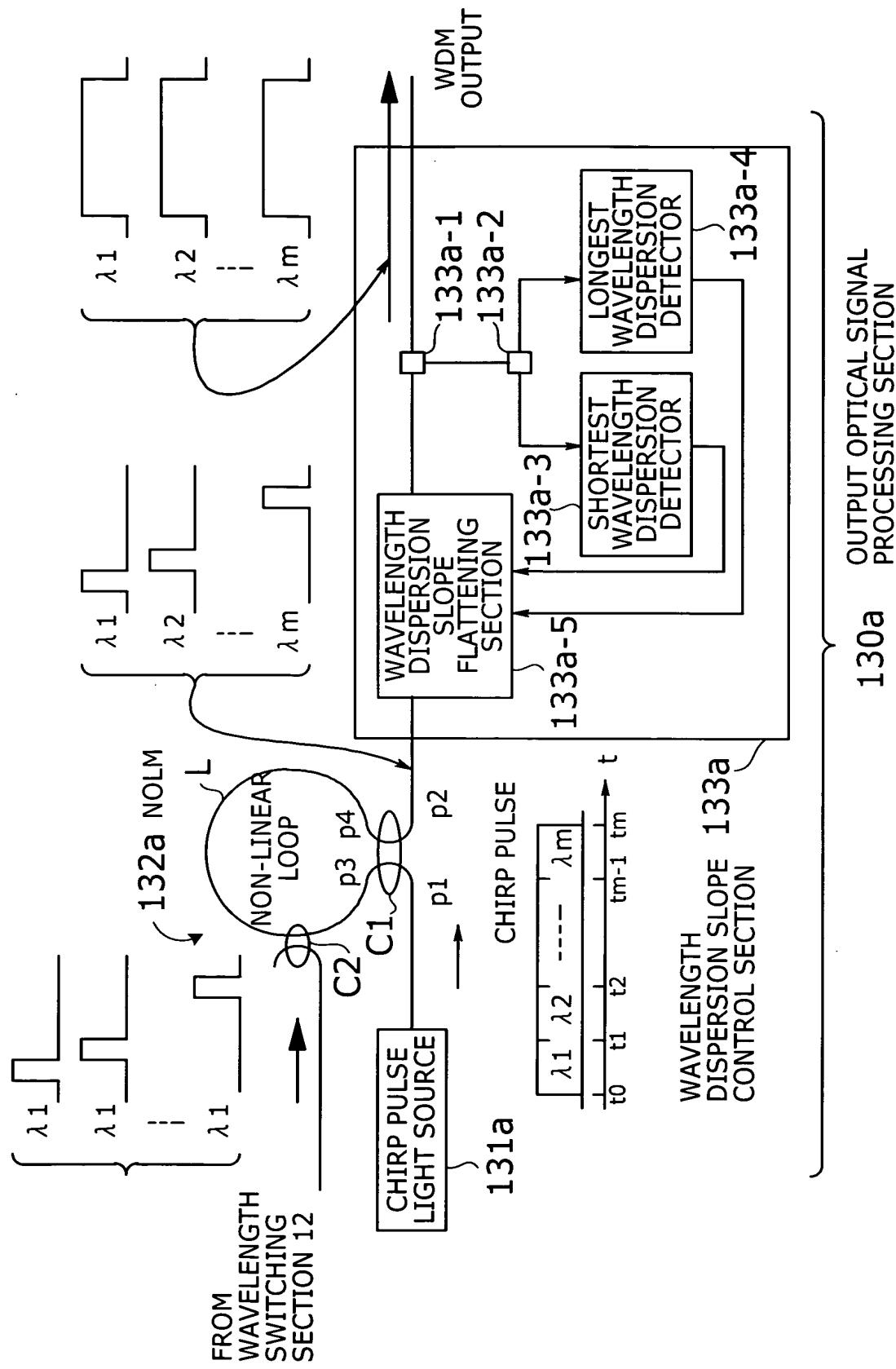


FIG. 16

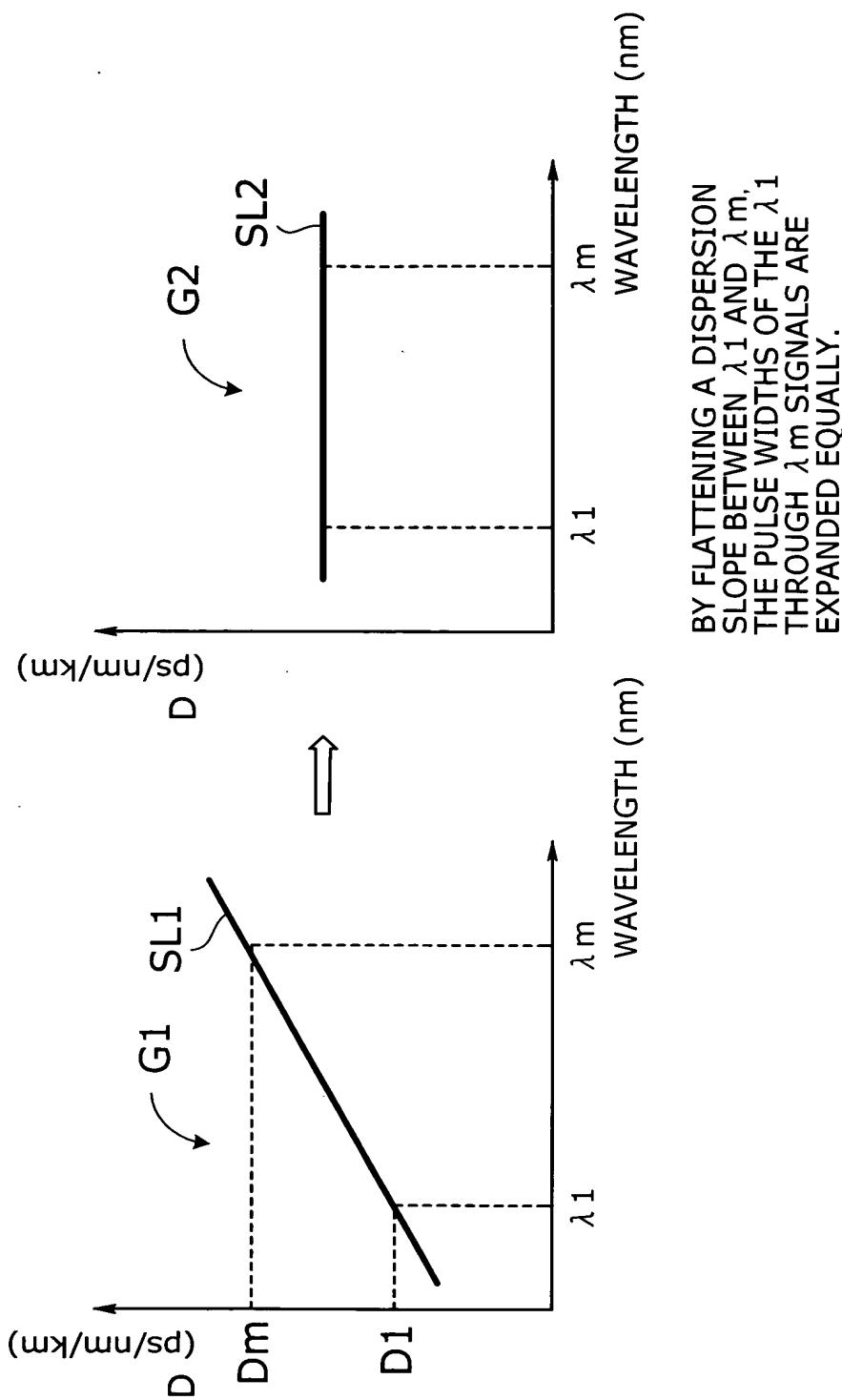


FIG. 17

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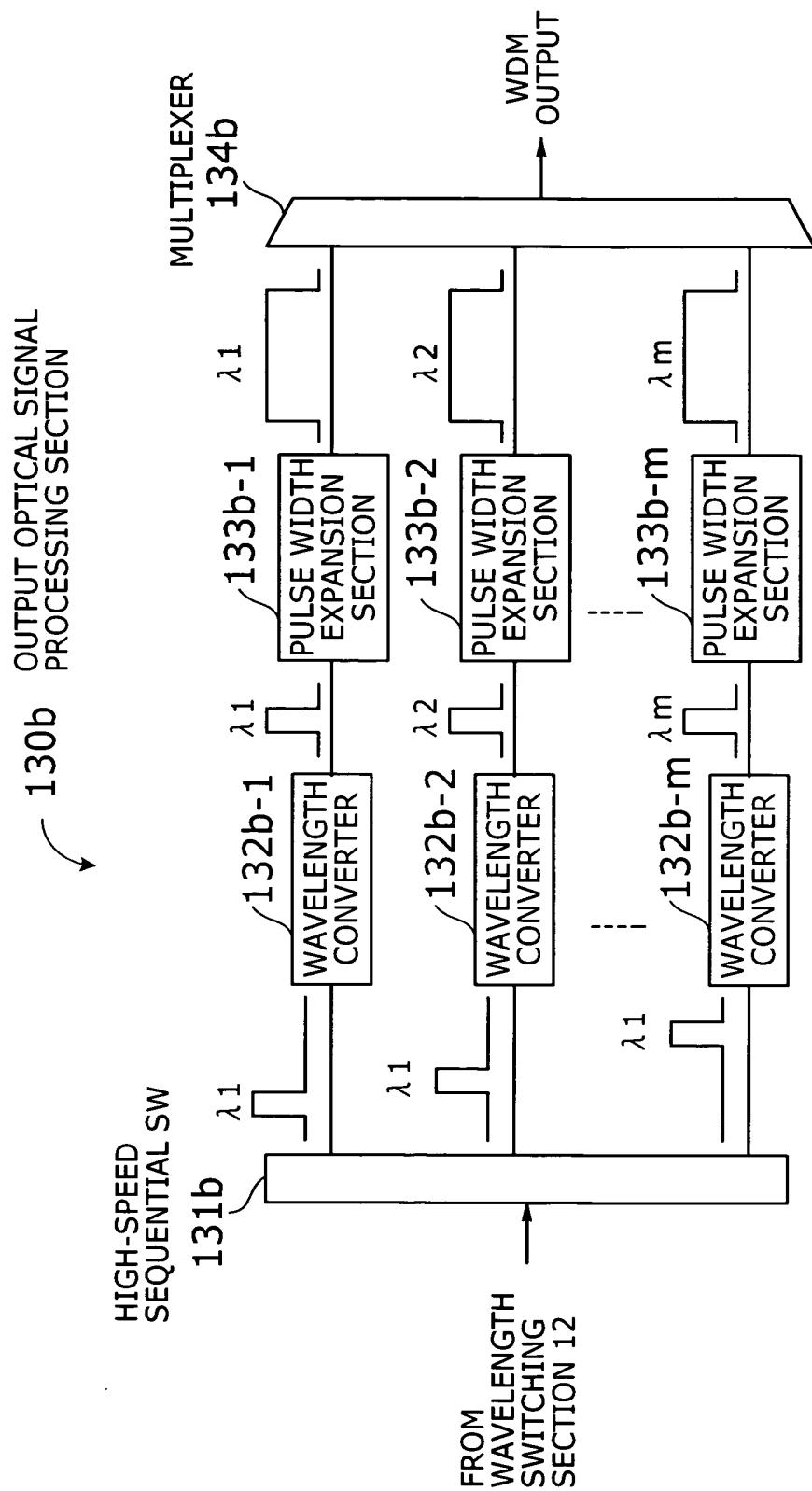


FIG. 18

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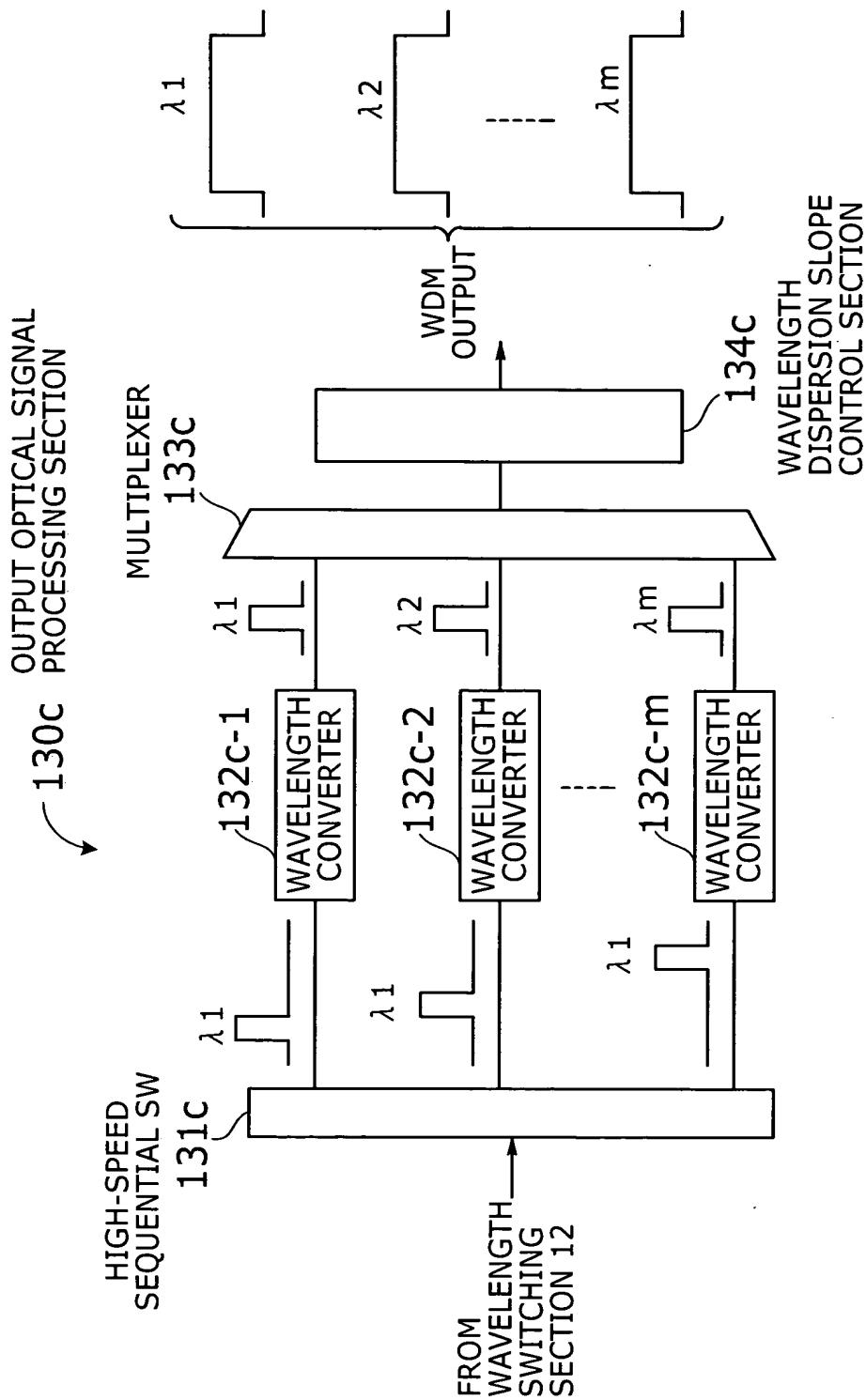


FIG. 19

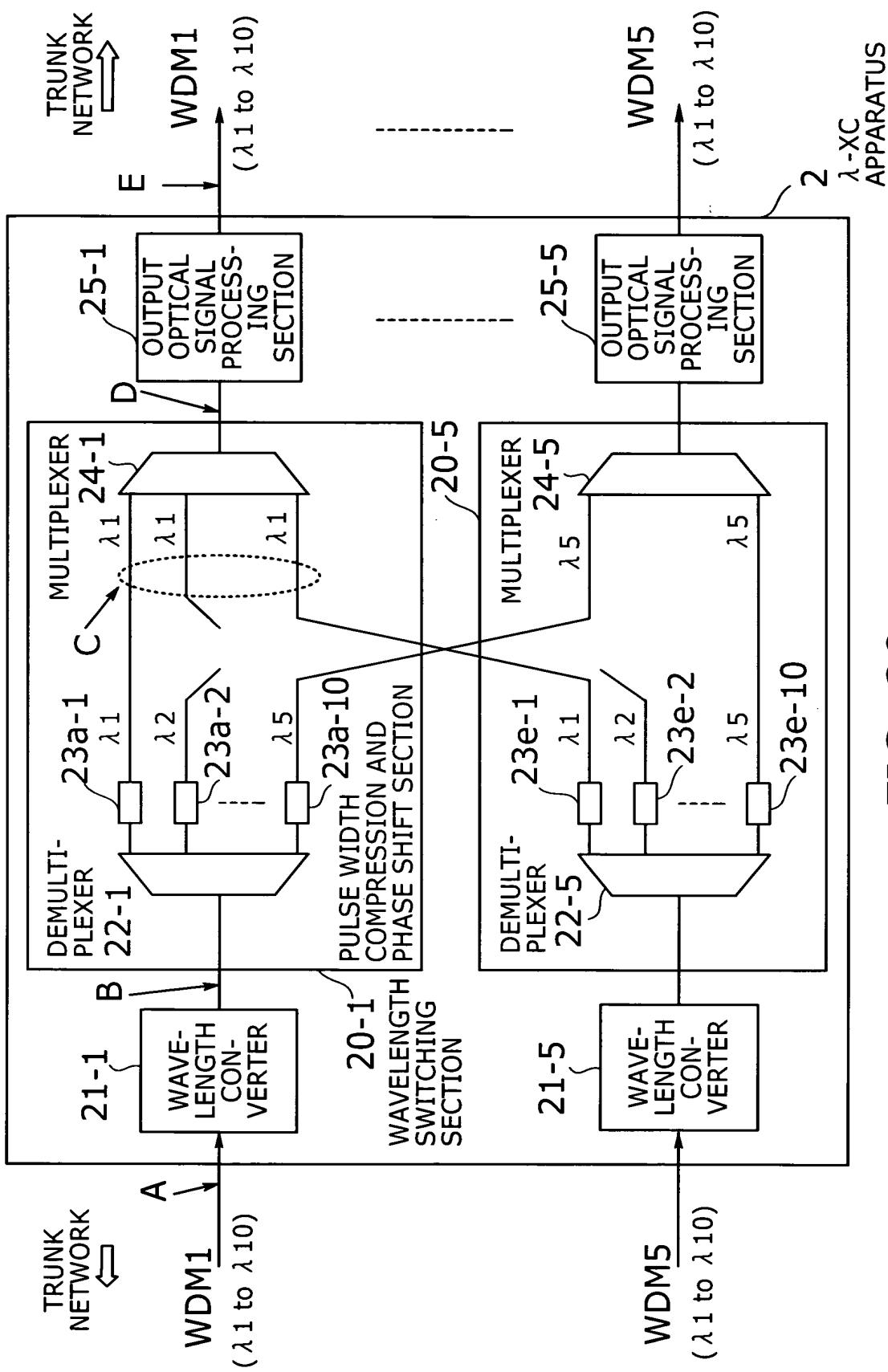


FIG. 20

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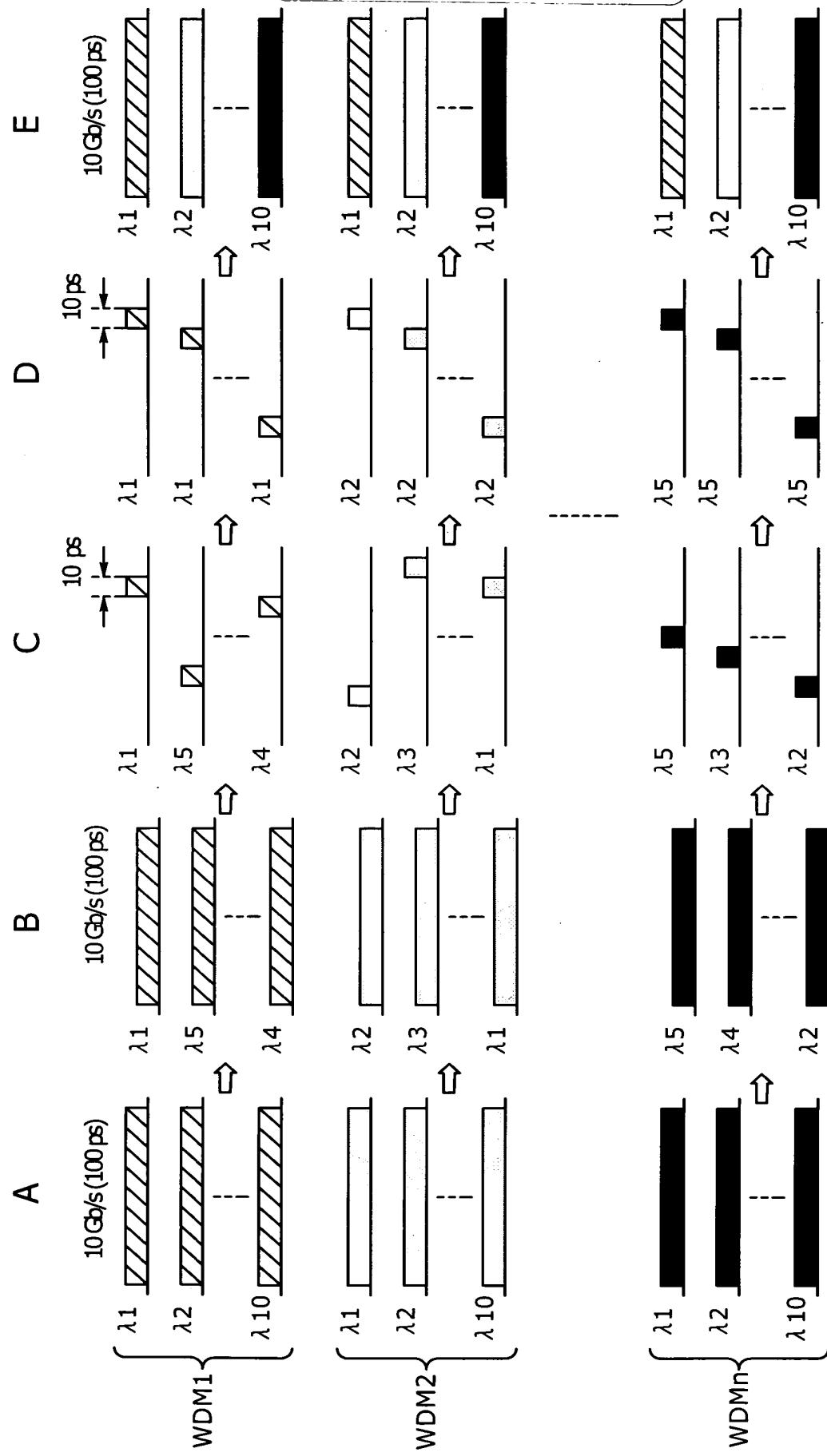


FIG. 21

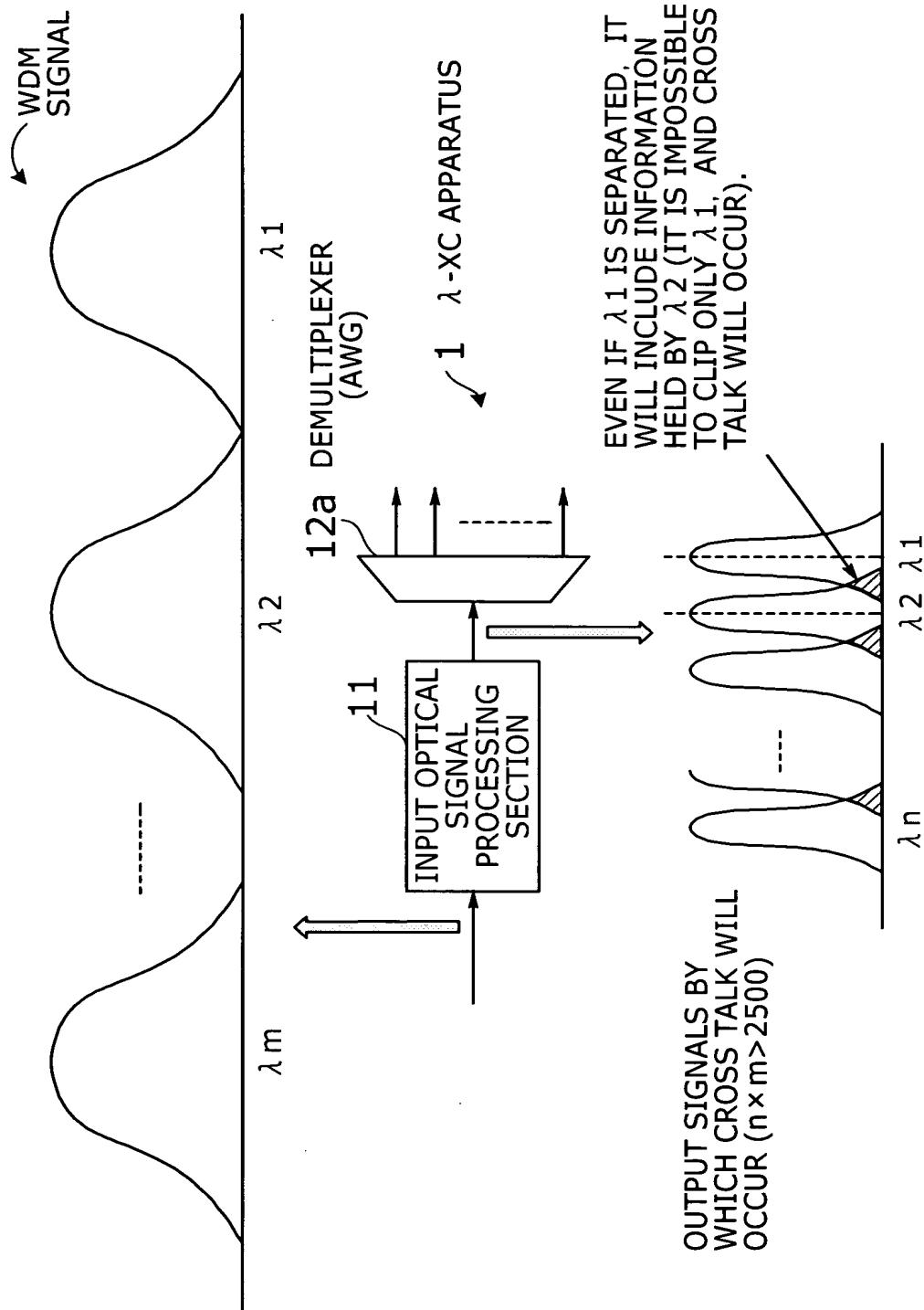


FIG. 22

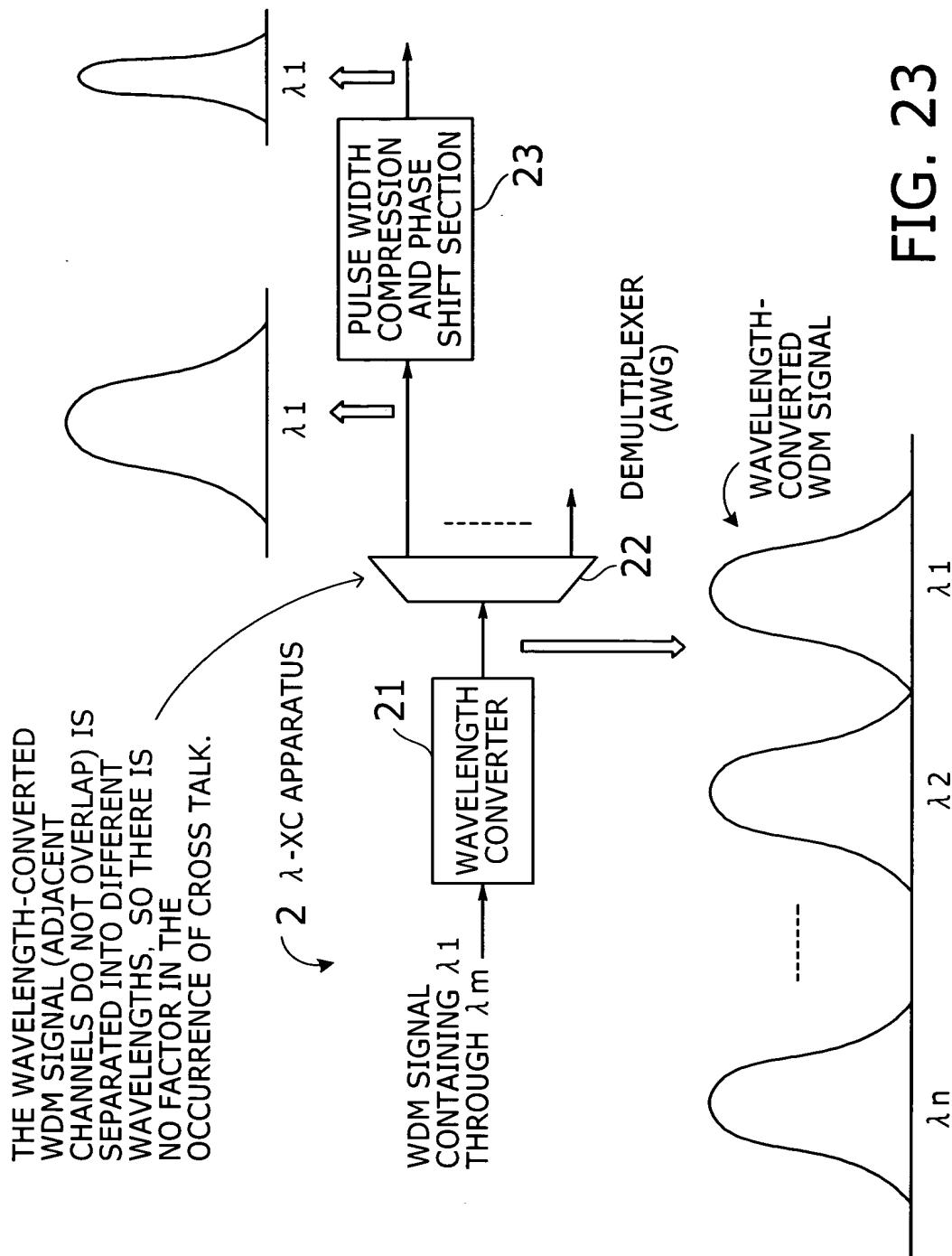


FIG. 23

WHEN OUTGOING LINES CORRESPONDING TO $(m-1)$
 INCOMING LINES HAVE BEEN ESTABLISHED IN AN
 $m \times m$ SWITCH, THE DESTINATION OF THE
 REMAINING PATH IN A SWITCH WILL BE DETERMINED.

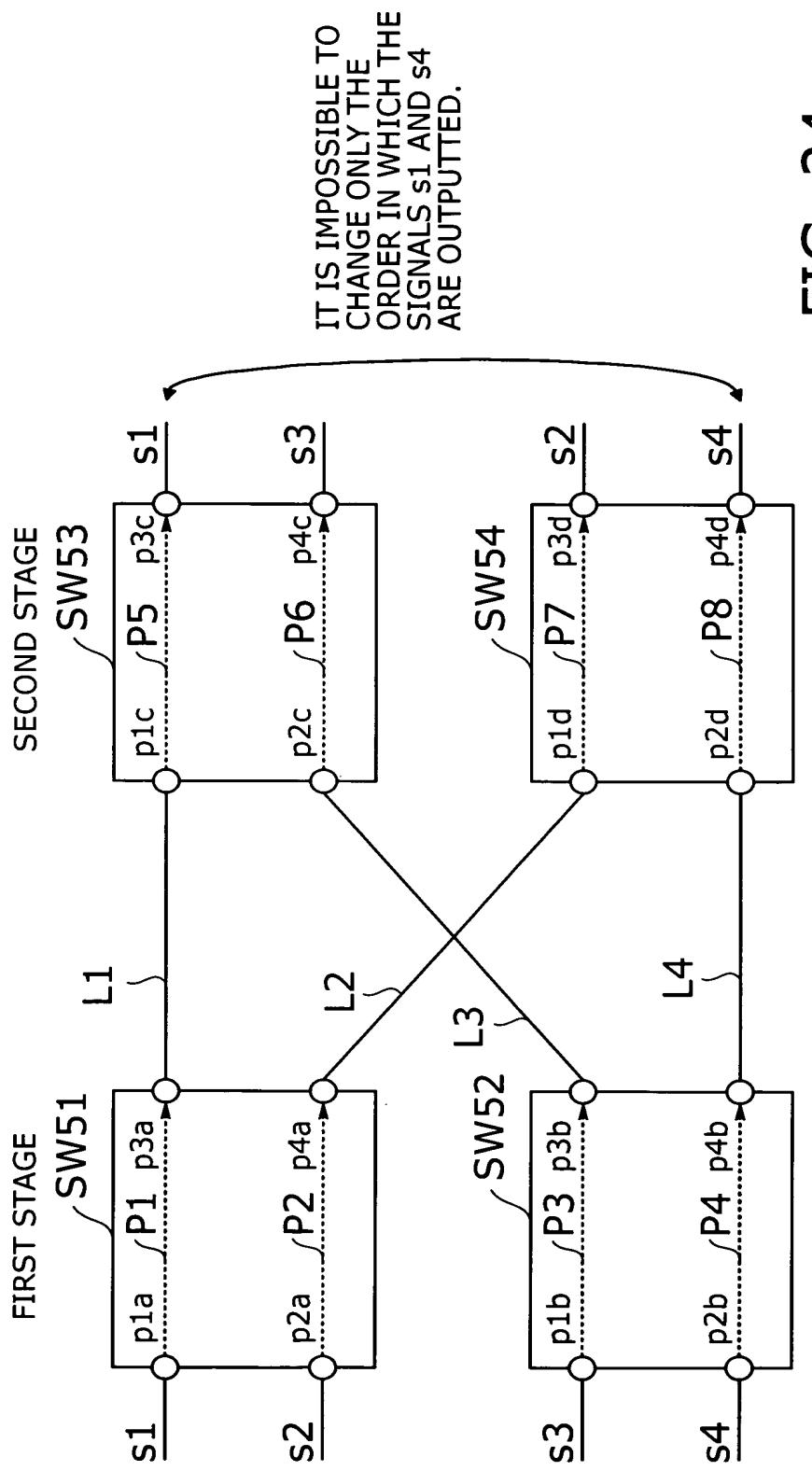


FIG. 24

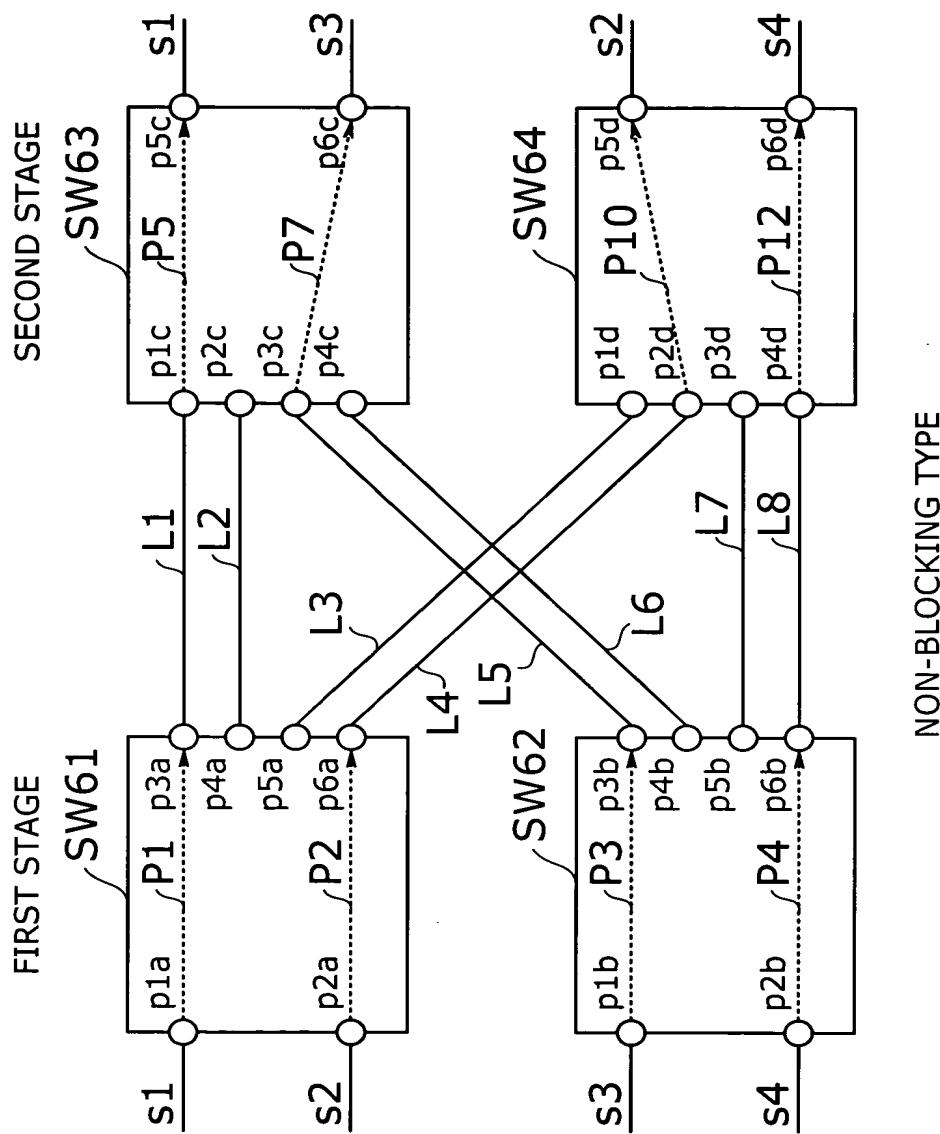


FIG. 25

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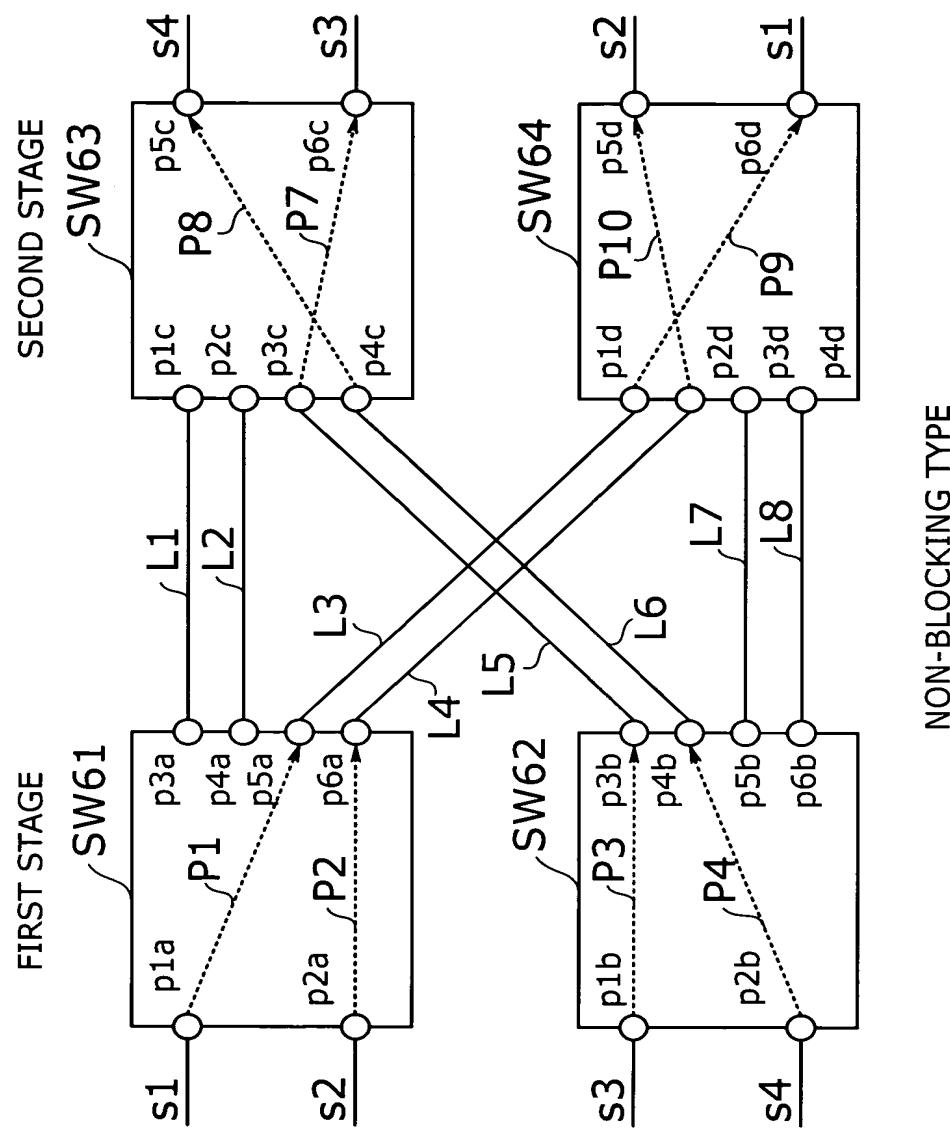


FIG. 26

NON-BLOCKING TYPE

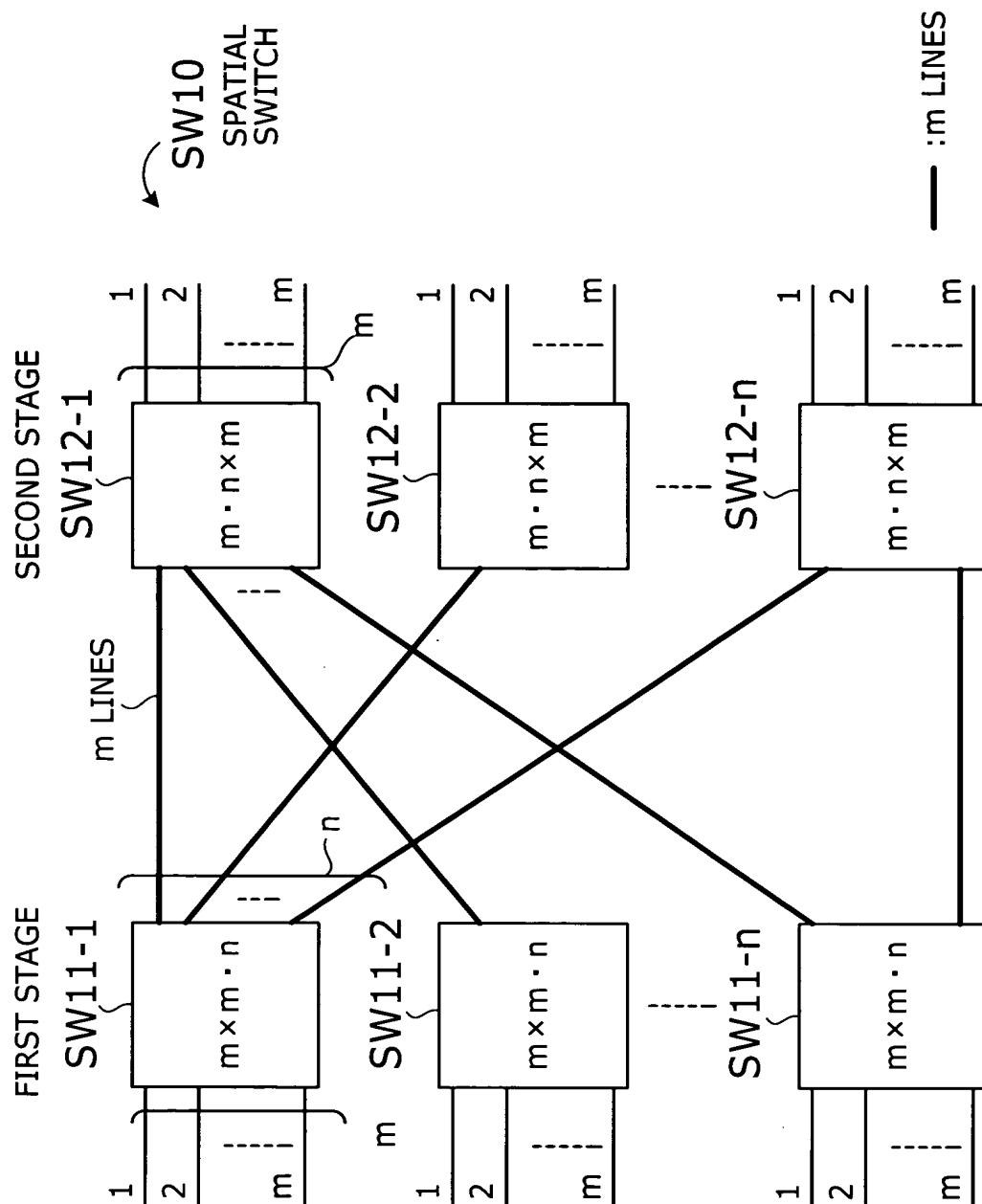


FIG. 27

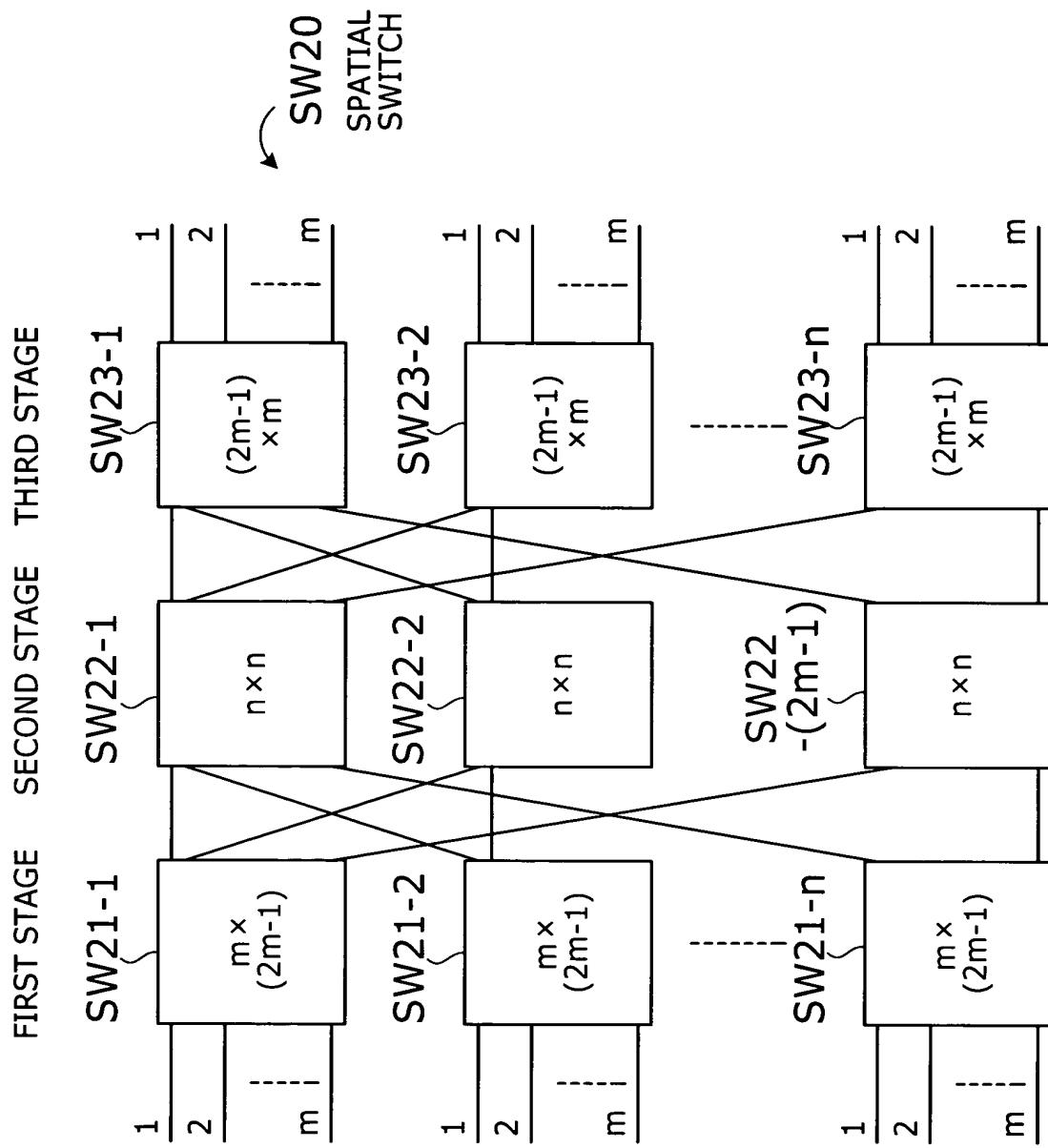


FIG. 28

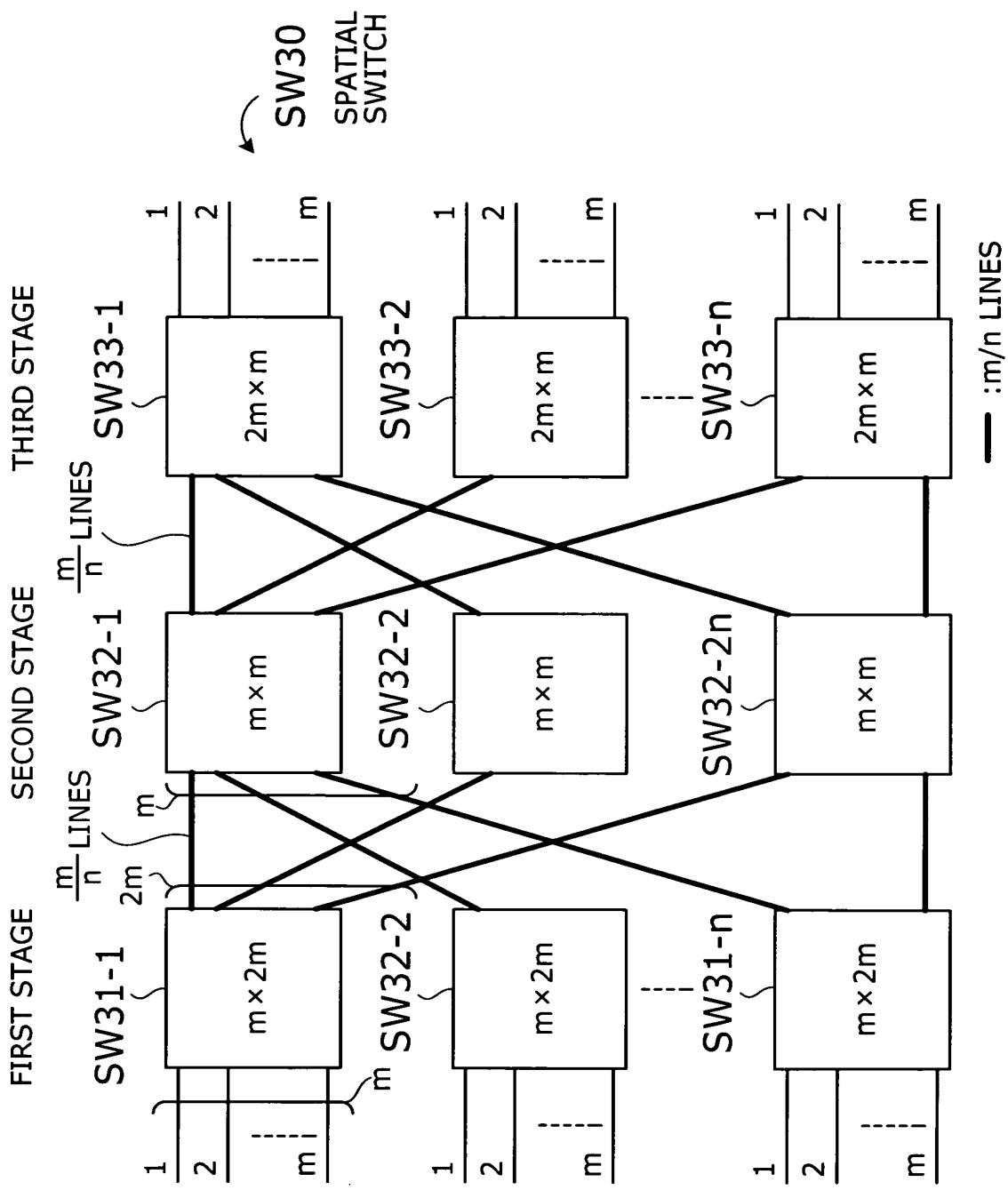


FIG. 29

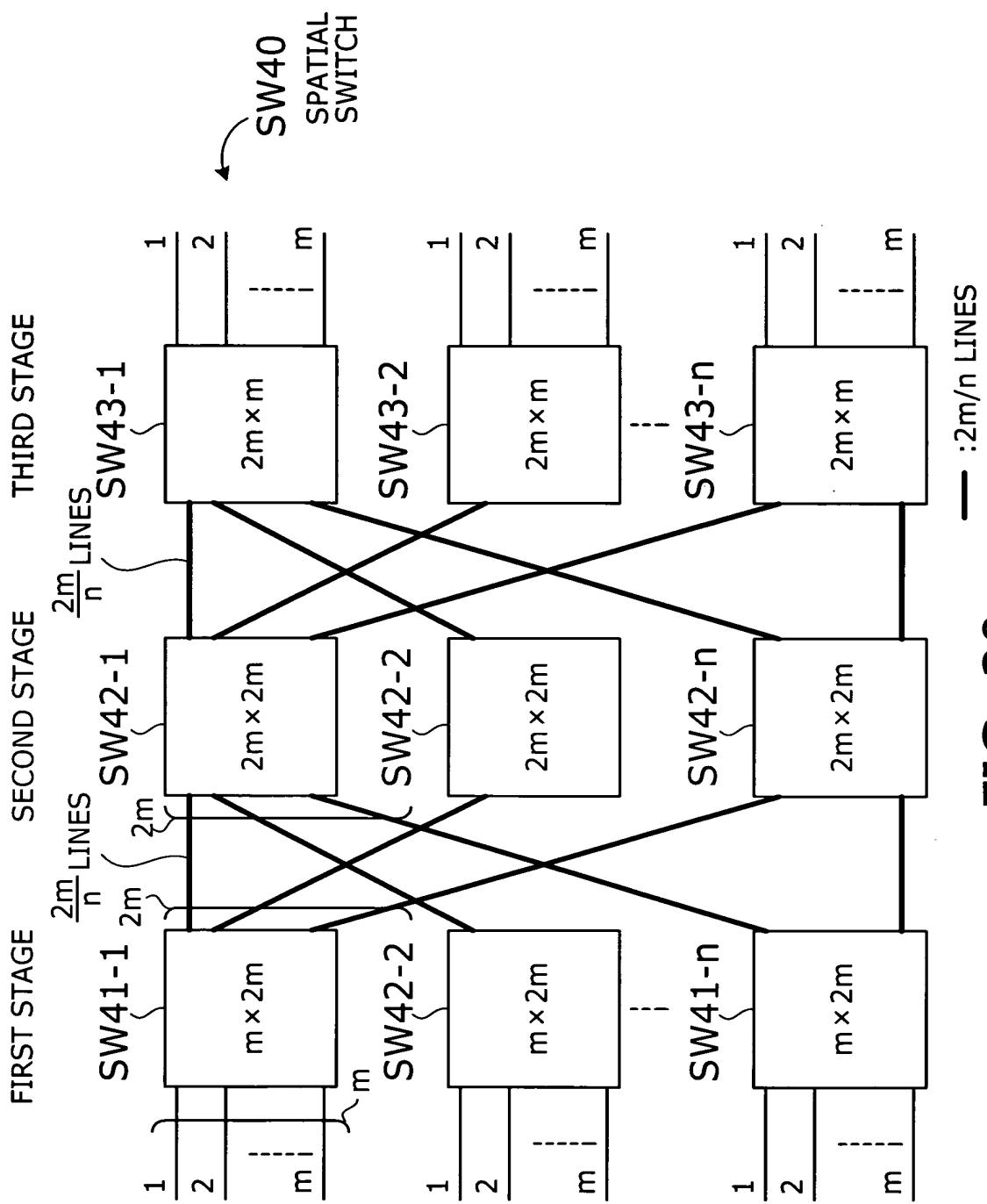


FIG. 30

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3 λ-XC APPARATUS

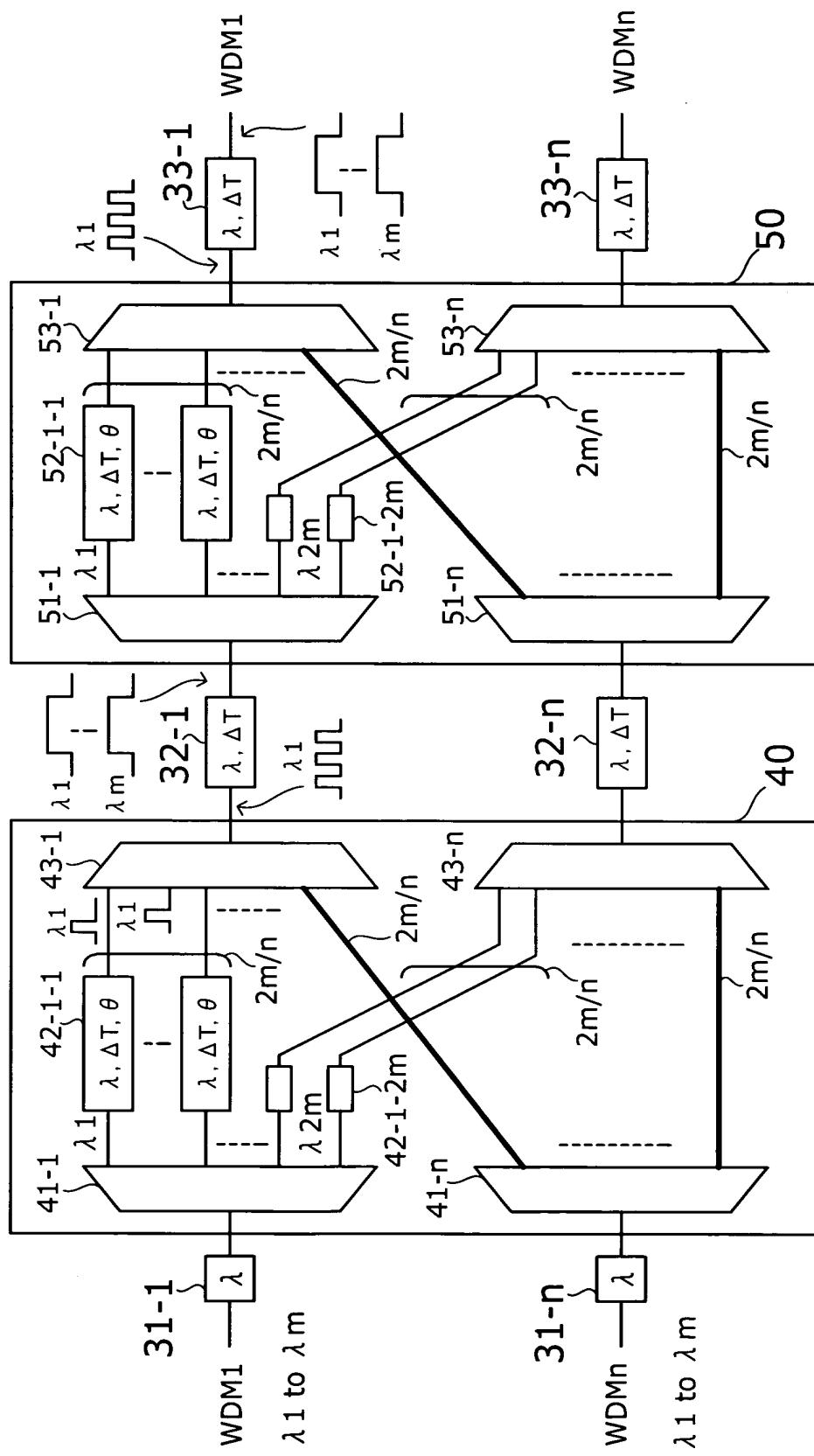


FIG. 31

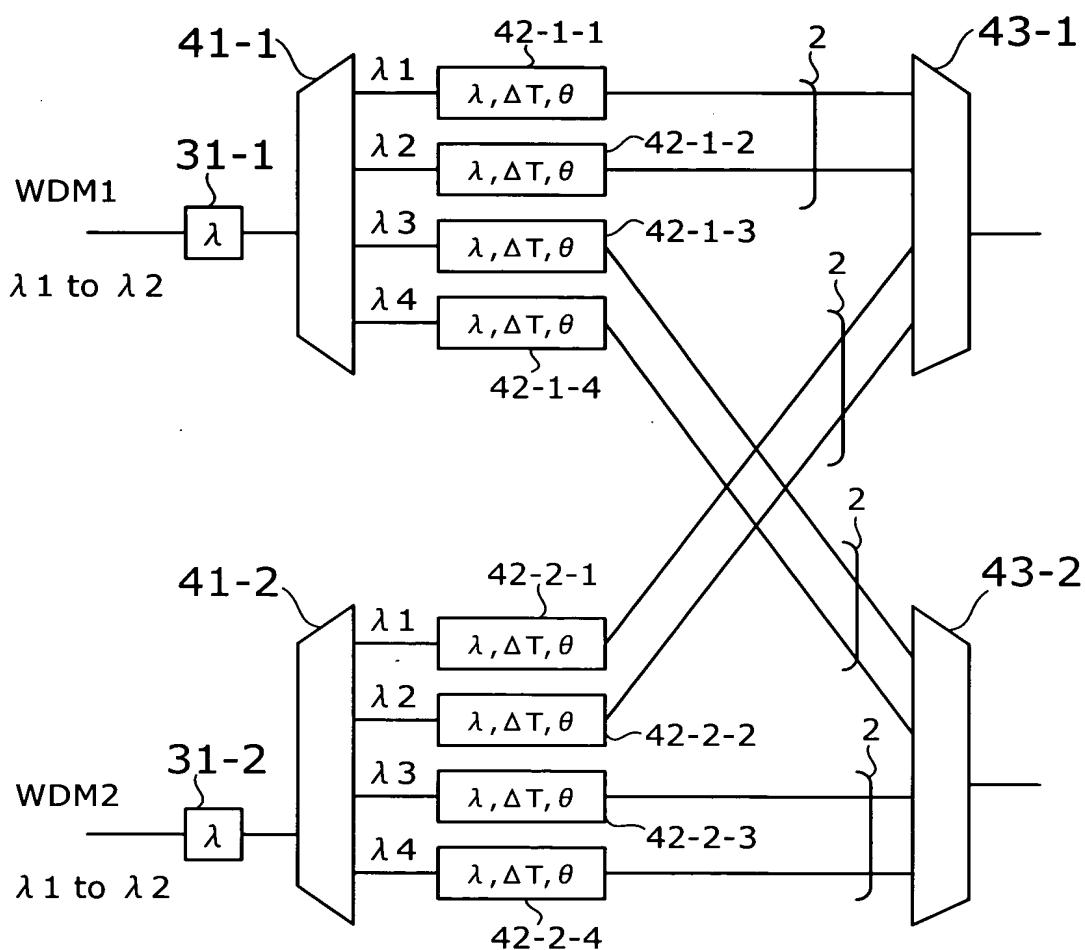


FIG. 32

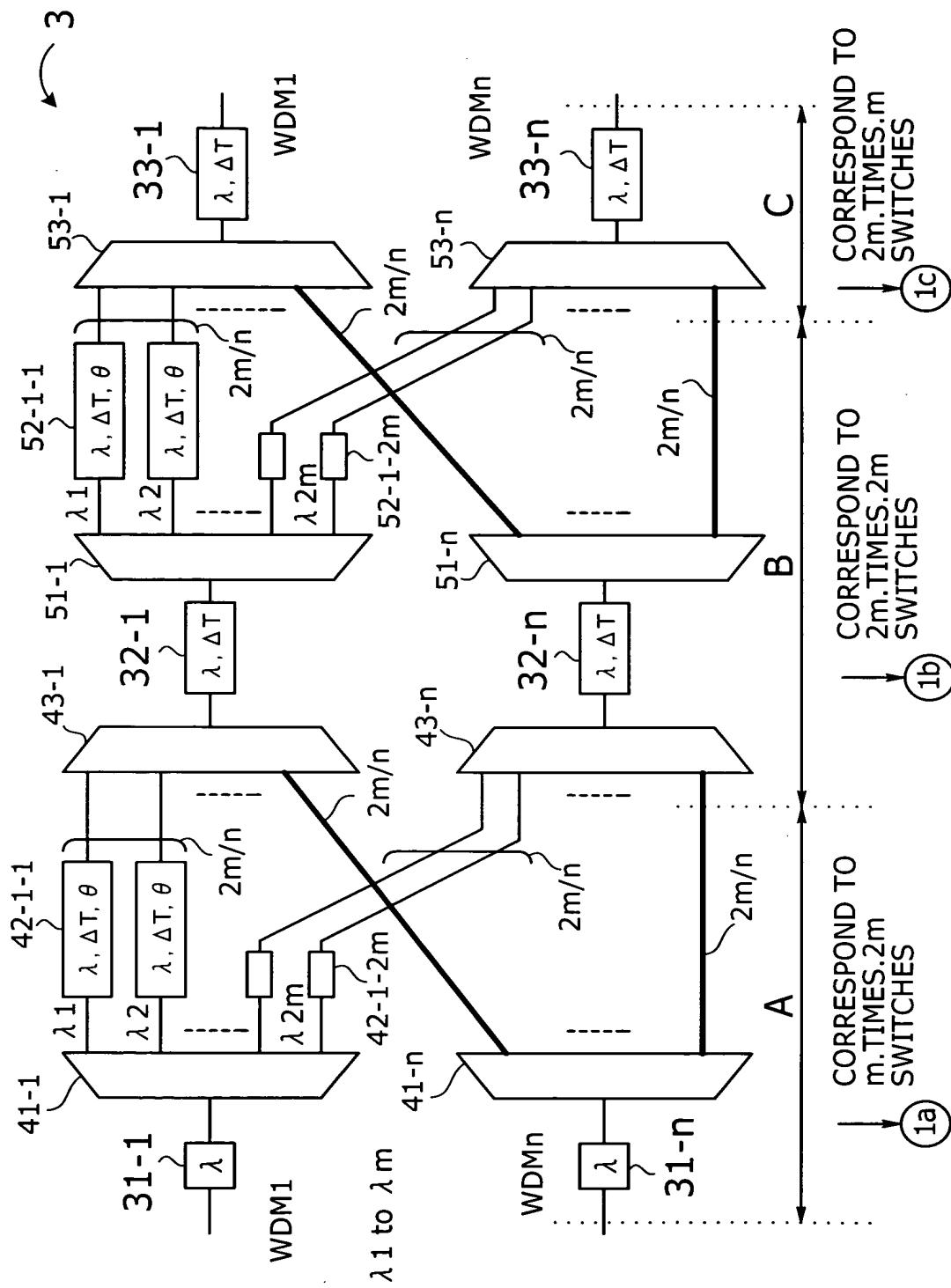


FIG. 33

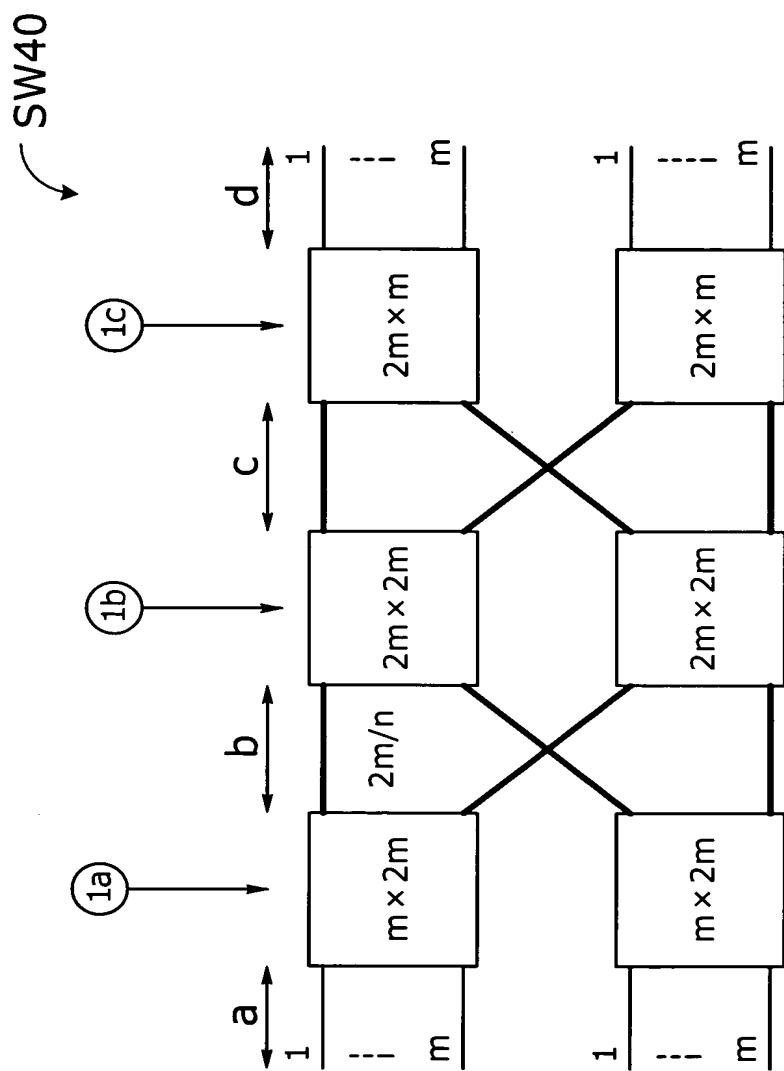


FIG. 34

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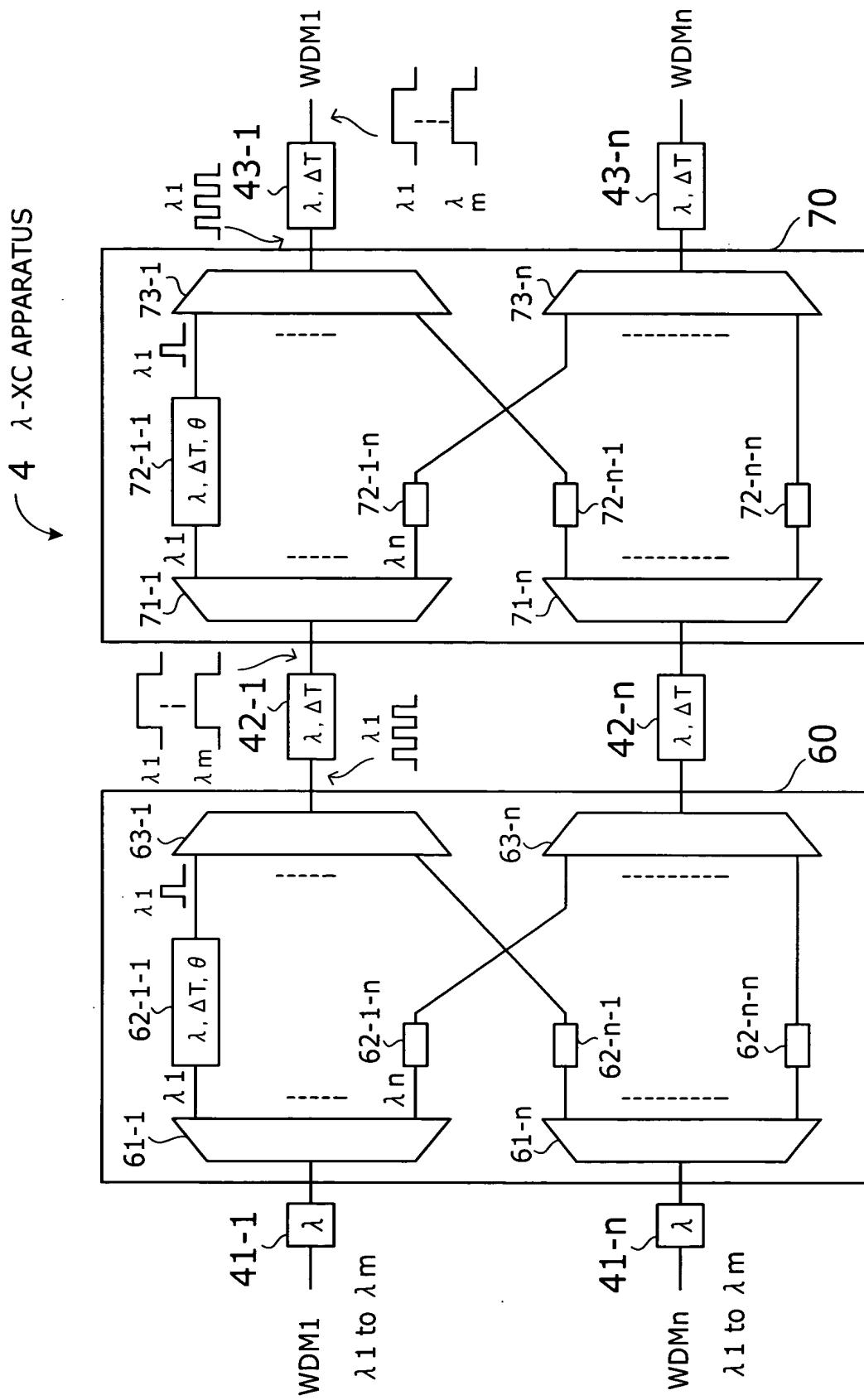


FIG. 35

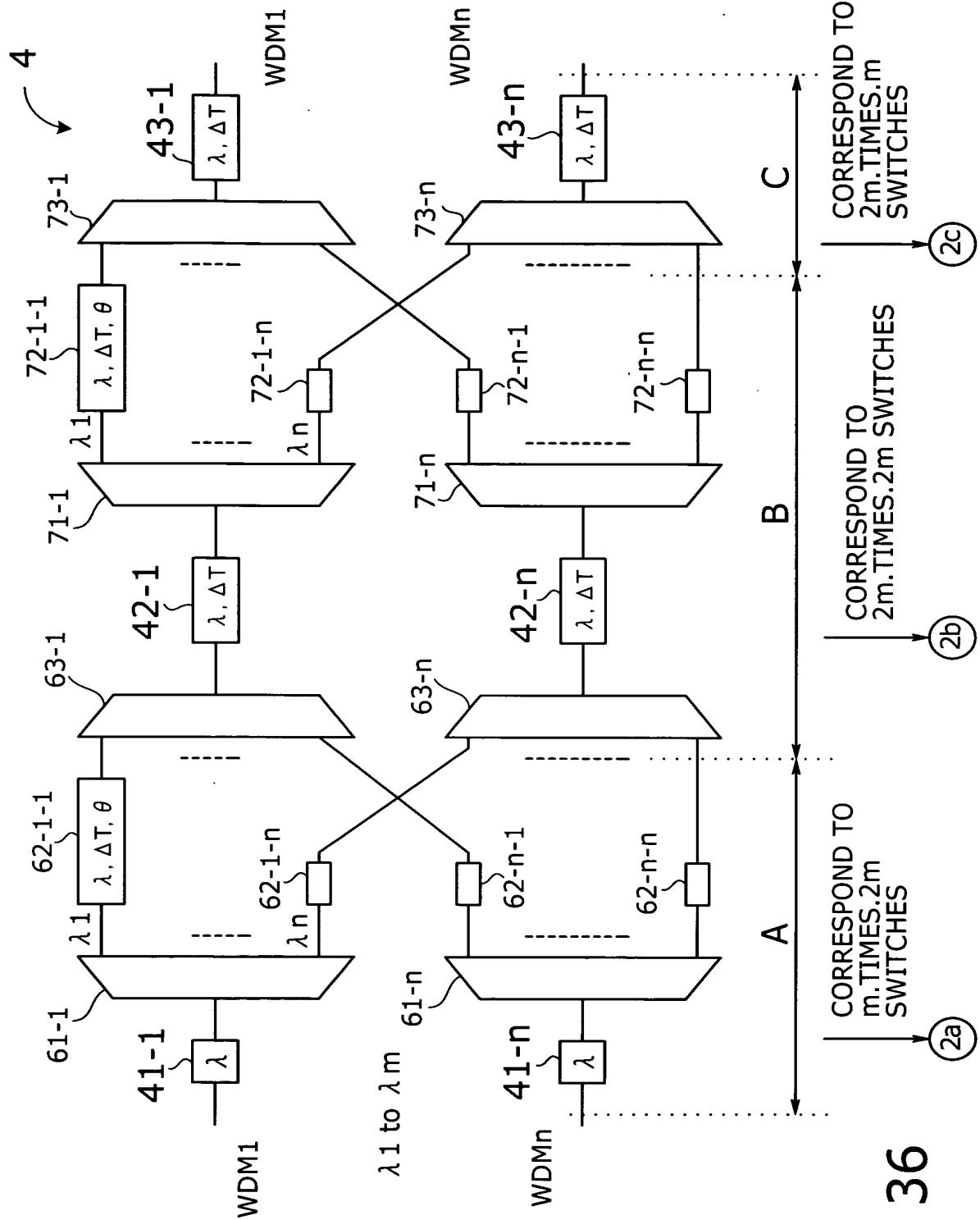


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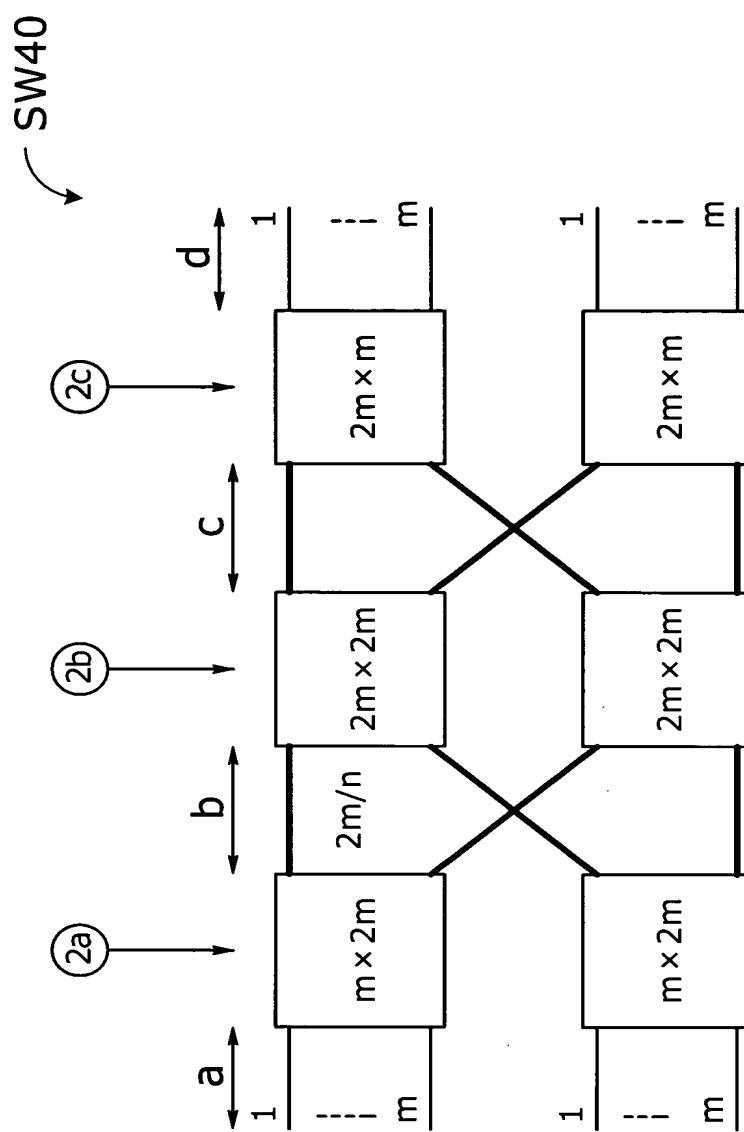


FIG. 37

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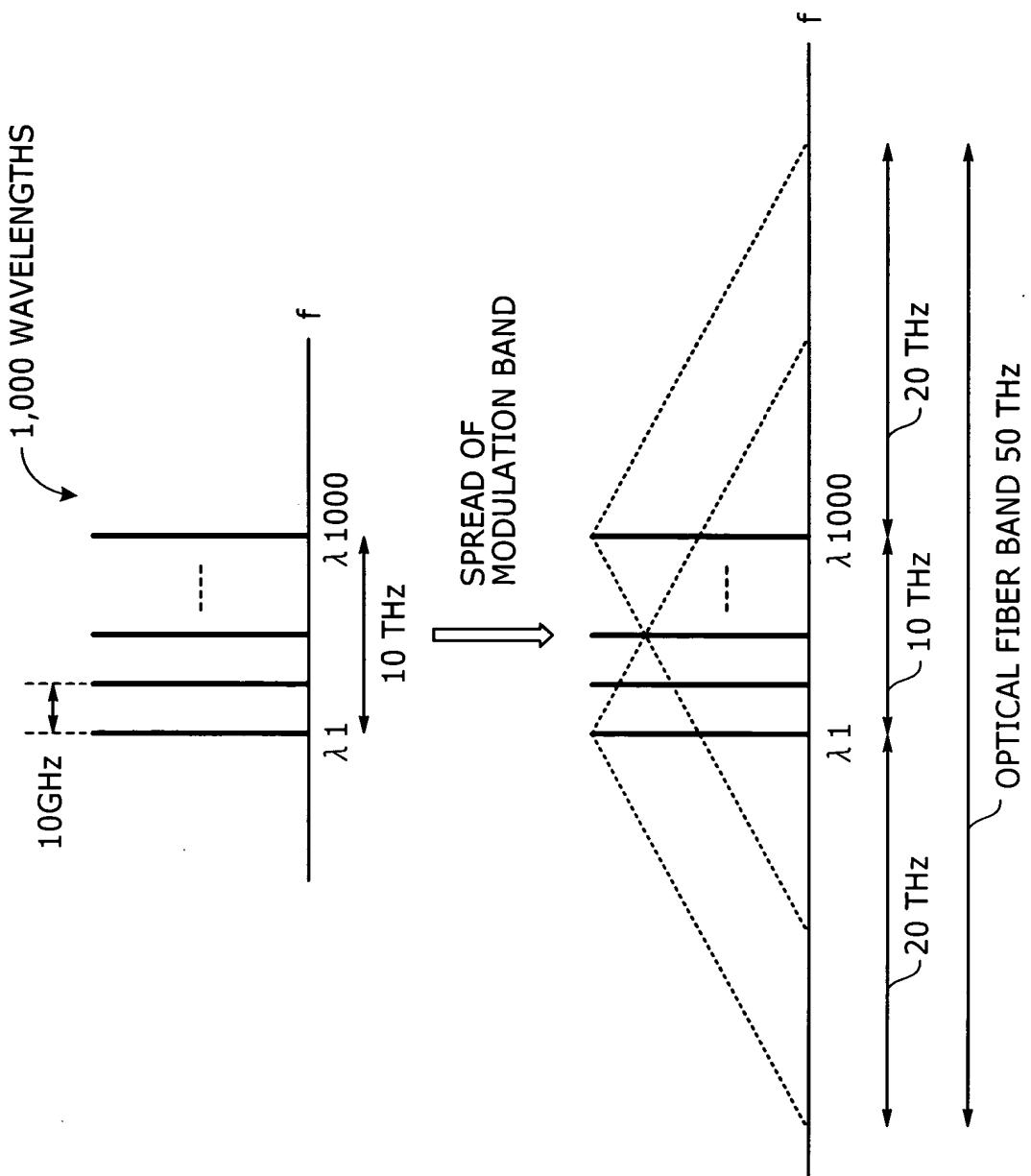


FIG. 38